American Druggist

AN ILLUSTRATED TRADE JOURNAL

VOL. XXI. No. 6. NEW YORK, MARCH 15TH, 1892. WHOLE No. 228.

IMPROVED AUTOCLAVE.

A GOOD autoclave ("Papin's Digester") is more and more becoming a necessary article of a chemical laboratory. Many operations and reactions can be carried on successfully only with employment of high pressure. Heretofore it was customary to make these digesters of cast-iron, with a cover attached to the digester by flanges and screws. This has proved unsatisfactory, since any inequality in tightening the screws will promote leakage.

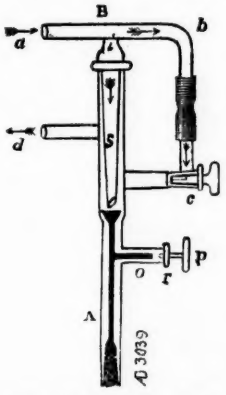
Robert Muencke, of Berlin, has now introduced an improved digester, of which there are various sizes and kinds, capable of standing different pressures and adapted for various purposes. The accompanying illustration shows the general construction.

The body of the digester is made of copper of a thick-

ness proportionate to the pressure the apparatus is calculated to stand. The interior of the boiler or digester is smooth. When it is necessary, a boiler or vessel made of lead, glass, porcelain, etc., may be set inside of it as a lining, and may be closed with a glass plate. The cover is semi-globular, and consists of hammered brass for pressures up to 25 atmospheres, and of phosphorus-bronze for higher pressures. As a washer a ring of lead is used, and the lid is tightened on by the screw *b*, as shown in the cut, the ends of the horseshoe-shaped clamp B resting against the under edge of the strong rim of the boiler. The cover is provided with a pressure gauge, M, connected by a U-tube filled with glycerin, the object of which is to prevent the access of injurious vapors to the interior of the gauge. At *r* is a safety valve. Further, there is a connection provided (at *n h*) for the attachment of a condenser in case the liquid in the digester is to be distilled off. At T provision is made for the insertion of a thermometer. The whole apparatus rests upon a perforated iron mantel provided with three legs. 3041]

A NEW THERMO-REGULATOR.

THE accompanying illustration shows the construction of a new form of thermo-regulator, or apparatus for feeding a gas flame in such a manner that a uniform temperature is maintained in the interior of the oven or chamber heated by it. The gas (coal gas) enters at *a*, following the direction of the arrows. At *c* is a stopcock, by means of which it may be entirely shut off. At *i* is a small opening in the main tube, through which a small supply of gas reaches the burner, even when the stopcock *c* is closed, so that the flame will not go out altogether. The mercury in the reservoir A, which must be *inside* of the oven or chamber, will gradually expand as the temperature rises, and more or less approach the obliquely cut-off orifice of the inner tube *s*. When the proper temperature has been reached, a fine adjustment



of the mercury column is made by means of the screw *p*. The orifice at *d* is connected with the gas burner. 3039]

Experiments upon Gas Explosions.

AN interesting experiment, showing the explosive tendency of ordinary illuminating gas when mixed with atmospheric air, has been recently made by T. O'Connor Sloane, Ph.D., and published in the *Scientific American*. Two common tin funnels are placed with their mouths together, and held in this position by a rubber band which is sprung over their junction. They are then placed over a gas jet and the gas turned on and, after a few seconds, ignited at the end of the upper spout. The gas is then turned off and the funnels are removed and held with the lower opening perfectly free. The flame remains luminous for a short time, until air begins to enter it, when it becomes gradually bluer and paler, and then smaller and smaller, finally going down the tube, when, in a second, quite a violent explosion occurs, separating the funnels with some considerable force.

The applicability of the above experiment is seen almost every day in large cities in which an electric subway exists. In the manholes which are placed along these subways gas is constantly escaping, and, owing to the laws of diffusion, air mixes with it, thus forming the necessary explosive compound. Upon the approach of a light or electric spark the usual resulting phenomena are well known—an explosion occurs, the manhole is wrecked, the iron lid thrown into the air, and danger threatened, if not actual injury inflicted upon, the passing public.

Notes on New Remedies.

THE following notes are taken from the Annual Report (*Jahresbericht*) of E. Merck, of Darmstadt, for January, 1892:

Filicic Acid, amorphous ($C_{35}H_{42}O_{13}$).—An amorphous, light, white powder, odorless and tasteless, soluble in cold alcohol, very easily soluble in alkalies and fatty oils. Melting point near 125° C.

Poulsson has shown that the amorphous filicic acid is the only active constituent of oleoresin of male fern, while the crystalline filicic acid (the commercial filicin) is inert. Both substances exist in the oleoresin in variable quantity. It seems, therefore, that the amorphous acid deserves attention. Since it is easily soluble in the intestinal canal, but is absorbed only with difficulty, it will serve to kill the parasites (worms) without injuring the host. The dose is stated to be about 0.5 to 1.0 Gm. (8 to 16 grains). Since the acid is very soluble in fixed oils, it will be best not to use castor oil as a laxative in connection with it.

Chloric Ether; Ethyl Chloride (C_2H_5Cl).—Ethyl chloride is a gas at the ordinary temperature, but is easily condensed and then appears in form of a colorless liquid of agreeable ethereal odor, boiling at 10° to 12° C. In consequence of its low boiling point and rapid evaporation it is used as a local anæsthetic.

For medical purposes ethyl chloride is brought on the market in sealed glass tubes holding about 10 Gm., and drawn out into a capillary tube, the end of which is broken off just before use. By holding the tube in the hand the liquid is ejected in a fine stream of vapor or spray, and if this is held against some part of the skin of the patient, local anæsthesia is produced. The best effect is obtained by applying the spray at a distance of 10 to 15 Cm. (4 to 6 inches). The lowest temperature which can thus be produced is —35° C.

The only disagreeable feature about the article is its inflammability. Great care must be exercised not to open the tubes or apply the agent in the neighborhood of a flame.

Aloin (Barbaloin) ($C_{16}H_{16}O_7$).—It has recently been reported by H. Meyer (*Arch. f. exp. Pathol. and Pharmakol.*, 1891, 186) that barbaloin may be used as a purgative, not only when administered per os, but also subcutaneously. For internal administration it is best combined with potassium carbonate or iron carbonate (in pills containing 1½ gr. of aloin and of either of the last-named substances).

As a solvent for the subcutaneous administration of aloin, *formamide* has been found the best, which is a good solvent of it when warmed. The injections are made in the lower arm. Meyer used a 10-per-cent solution, of which 0.5 Cc. (8 minims) correspond to 0.05 Gm. (¾ gr.) of aloin.

[Formamide is called "harmless" in Meyer's report. We have not heard of its use as a solvent for hypodermic uses so far. It is a neutral liquid, miscible with water, usually prepared by heating 2 parts of dry ammonium formate with 1 part of urea until no more ammonium carbonate is given off.]

Ammonium Salicylate ($NH_4.C_7H_5O_3$).—Colorless monoclinic prisms easily soluble in water.

Goll pronounces this salt a better expectorant than senega or quillaja. It is administered in wafers owing to its disagreeable taste.

Apocodeine Hydrochlorate ($C_{18}H_{19}NO_2.HCl$).—An amorphous, yellowish-gray powder, easily soluble in water.

W. Murrel has recently recommended this substance as an energetic expectorant, either internally or hypodermically. Dose internally, 2 to 4 gr. per day; hypodermically, 8 to 20 minims of a 2-per-cent aqueous solution.

Caffeine Phosphate, also Succinate.—These salts are crystalline powders, easily soluble in alcohol. The former is soluble in boiling, the latter also in cold water.

Carpaine Hydrochlorate.—The alkaloid carpaine was discovered by Greshoff in the leaves of *Carica Papaya*. It is a crystalline base, of very bitter taste, and forms crystallizable salts with acids. Carpaine has been found by v. Oefele to be, besides the caffeine group, the only substitute for digitalis which produces no irritation or abscess when applied subcutaneously. The proper dose is $\frac{1}{10}$ to $\frac{1}{6}$ gr. per *day*. The effects appear a few minutes after administration.

Quinine and Iron Chloride: "Chininum ferri-chloratum."—This compound, which was first proposed by Dr. Kersch, is in form of dark-brown, shining scales, or a reddish-brown hygroscopic powder, of a bitter, astringent taste, easily soluble in water and in 70-per-cent alcohol.

It is reported to be an excellent hæmostatic and equally well applicable internally and externally. In the latter case it is sprinkled, in powder, upon the bleeding wound. In epistaxis it is sniffed up the nostril; in uterine hæmorrhages 2-per-cent injections are used, and in gastro-intestinal hæmorrhages or in hæmoptysis it is administered in doses of 2 to 4 gr. per day, in pills, wafers, or mixture.

Cocaine Nitrate ($C_{17}H_{21}NO_4.HNO_3$).—This cocaine salt is indicated when nitrate of silver is to be used at the same time, since the hydrochlorate of cocaine would produce insoluble silver chloride. Nitrate of silver injections in the urethra, etc., are painless if nitrate of cocaine is combined with the silver salt. A solution containing about 10 grains each of silver nitrate and cocaine nitrate is generally employed.

Hydrastine Hydrochlorate.—Regarding this substance Merck gives some interesting information. Repeated demands reached him to supply the salt colorless, or *white*. This could not be complied with, since the salt has, naturally, a light lemon-yellow color. If this color appears dark or brownish or reddish it should be rejected. Its aqueous solution should be clear, faintly yellowish, and should show a very strong blue fluorescence, which appears very prominently when the liquid is strongly diluted.

The following test is suggested by Merck:

Dissolve 0.2 Gm. of the salt in 6 Cc. of water and add 6 drops of solution of soda (about 20 per cent). Each drop causes a milky-white precipitate, which disappears on agitation, a perfectly clear liquid finally remaining. On shaking this, or stirring with a glass rod, the free alkaloid hydrastinine crystallizes out. If now a little more soda is added the separation will, after a short time, be complete. The separated alkaloid must have a pure white color, and the supernatant liquid must be *clear* and nearly colorless. On now acidulating with hydrochloric acid, the alkaloid redissolves and the liquid at once reassumes its yellow tint.

Recent reports on the salt confirm former statements as to its value as a uterine hæmostatic. The dose is given as about ½ to ¼ gr. internally, repeated some four times a day; or hypodermically about 8 to 16 minims of a 10 per-cent solution.

Magnesium Gynocardate.—The magnesium salt of gynocardic acid, from oil of chaulmoogra. Roux has recommended this salt in leprosy in the following form:

Magnesii Gynocardatis	4 Gm.
Ext. Gentianæ	1 "

M. Make 20 pills. Dose: 5 to 20 pills daily before meals.

Instead of this salt, the same author also recommends *Natrium Gynocardate*, which is put up in capsules containing ½ gr. each (0.2 Gm.).

Dose: 5 capsules twice a day before meals.

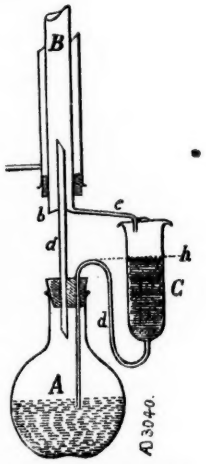
Ipecac freed from Emetine.—It is well known that the remarkable antidysenteric properties of ipecac are unfavorably affected by the depressing action of the emetine contained therein. Merck, therefore, tried to free the root from its emetic principle without injuring its specific antidysenteric effect. He states that he has been so far successful that he succeeded in eliminating all but an insignificant fraction of it without disturbing the other constituents. The purified root is at present under experiment in India.

Strontium Lactate [$Sr(C_3H_5O_3)_2+3H_2O$].—Various strontium salts have recently been introduced into medicine as remedies in excessive acidity of the stomach, also in Bright's disease and in epilepsy. The lactate is very favorably reported on by C. Paul in most forms of ne-

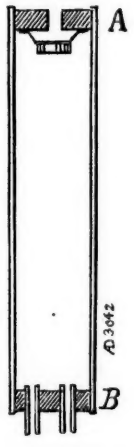
phritis, in which it was found to reduce the quantity of albumen very materially without causing diuresis. It is of no use in those cases of nephritis in which there is a deficiency in the secretion of urine or in which there are uræmic symptoms. The usual dose is from 2 to 4 Gm. (30 to 60 gr.) *per day*, though more may be given (up to 10 Gm., or 150 gr.) in special cases.

CONTINUOUS-EXTRACTION APPARATUS.

BOESSNECK'S extraction apparatus which is here illustrated has some features which render it probably in many cases more advantageous than others. The reservoir in which the extraction takes place is in a separate part, C, situated outside of the apparatus. This is sometimes desirable, though it is not necessary. Moreover, the menstruum may be recovered by pipetting or siphoning it off from the reservoir before it has a chance of flowing back into the flask. The little tube *c*, through which the condensed liquid flows into the reservoir, ought to have a small trap to prevent the vapor of the menstruum from passing out at such times when the tube is not filled with the condensed liquid.—*Rép. de Pharm.*, 1892, 19. [3040]



Boessneck's Continuous-Extraction Apparatus.



Apparatus for Measuring Liquids.

APPARATUS FOR MEASURING LIQUIDS QUICKLY.

IN some laboratories many solutions have to be measured, and to do this quickly is much to be desired. The following apparatus, which can be easily made, is very serviceable in rapidly measuring such solutions:

A piece of glass tube, A B, has a cork inserted in each end. Through the upper one a small hole is bored; this is closed on the under side by a valve of india-rubber cloth with a piece of cork attached to it. Through the bottom cork are bored two holes of about equal size, through which are passed two glass tubes. Two pinch-cocks are attached to two pieces of india-rubber tube at the end of each of these glass tubes. The liquid is run into the apparatus through one of these tubes from a reservoir by opening the clip. The liquid rises up and lifts the piece of cork, thereby closing the valve. There is now the desired quantity of liquid in the apparatus, which can be run out by opening the other clip, the valve meanwhile falling down, as shown in the figure, ready to let the air escape in filling again.

The same apparatus makes a good burette if the tube A and B is graduated and a little longer, as no time is lost in filling it to zero. It can thus be worked very quickly. —ALEX. F. REID in *Chem. News*. [3042]

Note on Chinese Ginger.

REGARDING the source of Chinese preserved ginger, it was recently reported that it was not derived from a species of Zingiber, but from *Alpinia Galanga* Willd. This appears to be a mistake, to judge from more authentic information received since then. In the *Kew Bulletin* of January, 1892, we find the following report of Mr. Charles Ford, Superintendent of Botanical Department, Hong Kong (here given in part only):

So far as I have been able to learn, preserved ginger is made at Canton and Hong Kong only. The Imperial Chinese Customs Returns for last year show that in junks alone the quantity of fresh ginger exported from Canton to Hong Kong was over 6,000 piculs (a picul is about 133 pounds). Preserved ginger is manufactured in Hong Kong to a large extent for export to the United States. "Preserved ginger," as understood by us, is not made in Swatow. What is preserved there is made for native consumption, to be used medicinally or for cooking, and is exported largely to the Straits settlements, and never to Hong Kong. This kind of ginger is called Ng Mai Keung. This, I understand, is an *Alpinia*, but it does not resemble the Canton ginger, and is, I believe, not preserved in syrup. The rhizomes of true ginger, Alpinias and Curcumas, are all classed generically by the Chinese under the name Keung. *Alpinia Galanga* Willd. is Leung Keung; *Zingiber officinale* Linn., Taiyeuk Keung; and *Curcuma* (turmeric), Wong Keung, and so on with other species. Now, I think that the native name of Keung, and the fact that the preserved ginger under consideration is not made at Swatow, which is 200 miles from Canton, will afford a probable explanation of some apparent mistake made when Mr. Playfair sent home what has been called "Chinese ginger," which mistake, supposing that one has been made, has resulted in the dissemination of what appears to be misleading information.

The same number of the *Bulletin* contains a communication of Mr. Percy Groom, of Whampoa, from which we take the following:

Recently it has been suggested in the *Kew Bulletin* that Chinese ginger is the rhizome of *Alpinia Galanga*.

Mr. Ford, in his annual report for the Botanical and Afforestation Department of Hong Kong for 1890, casts doubts on the conclusions thus arrived at.

To decide the question I first obtained preserved ginger (dry and in syrup), and I bought the natural ginger from street venders. The specimens thus procured all agreed in structure, but they differed from *Alpinia Galanga* obtained from Mr. Ford (a cutting of the original plants sent from Swatow).

I then caused inquiries to be made concerning the manufacture of preserved ginger. The manufacturers stated that only one sort of plant rhizome was ever mixed with it. In particular they stated that no variety of galangal rhizome (Leung Keung) was ever used in the manufacture of ginger. Hence so far it was safe to conclude that whatever Chinese ginger might be, it could not be *Alpinia Galanga*.

It remained to test Mr. Ford's view that *Zingiber officinale* Linn. was the source of Chinese ginger. At the end of October I ordered the head gardener of the college gardens at Whampoa to procure flowering specimens of the plant from which Chinese ginger (Taiyeuk Keung) was obtained. The flowering specimens thus obtained turned out to be a *Zingiber*, and Mr. Ford informs me that they are specimens of *Zingiber officinale* Linn. I also had fresh ginger purchased in the market by my servants (for at that time of the year the manufacturers of preserved ginger have no fresh ginger). This agreed precisely in structure with the zingiber rhizome; and in both these rhizomes the starch grains were alike (flattened discoid for the most part), and utterly different from the elongated, club-like, almost rod-shaped grains of *Alpinia Galanga* (Hong Kong specimen). These two rhizomes also agreed in structure with those obtained earlier in the year, viz., the preserved and natural ginger.

Finally I endeavored to purchase other sorts of fresh zingiberaceous rhizomes in October, and was unable to procure any. In all cases I was informed that the medici-

nal zingiberaceous rhizomes, and those used in flavoring, etc., came from distant parts, and that only the ginger for preserving grew in the immediate neighborhood. But without relying on this evidence, except confirmatory, it is safe to conclude that Chinese ginger is the rhizome of *Zingiber officinale*, as shown by anatomical observations, inquiries from the Chinese, and observations on the flower.

The Production of Quicksilver in California.

THE report of the Quicksilver Mining Company, of New Almaden, Cal., for the year ending December 31st, 1891, is the most unfavorable statement made by that company during the past 21 years. The production of quicksilver was smaller than in any preceding year, being but 68 per cent as great as in 1890, while in value there was a still more important decline, the average price of quicksilver having been $12.06 per flask lower in 1891 than in 1890.

In 18 0, 22,649 tons of ore were roasted, and in 1891, 25,548 tons, but the average yield of the ore during the latter year was only 1.22 per cent, against 2.02 per cent in 1890. On the other hand, the expenses in 1891 were very nearly as heavy as in 1890; the yield of quicksilver being so much less, the cost of production rose from $33.87 per flask to $48.62, and for the first time in 21 years the mines were operated at a loss. The deficit amounted to $57,523.96, which was $6.97 per flask.

There seems no doubt that the New Almaden mines are now upon the verge of exhaustion, and that within a few years the quicksilver mining industry of California will be a thing of the past, notwithstanding the remarkably able and economical management of the mines. The production of the California mines reached its maximum in 1879, when 79,396 flasks were produced. Since that time the output has diminished steadily. In 1881 the yield was 60,851 flasks; in 1891 it had fallen to 22,904 flasks (*Engineering and Mining Journal* figures, January 2d, 1892, 21,022). Hon. J. B. Randol, manager of the Quicksilver Mining Company, estimated that the output of 1892 would fall below 15,000 flasks, which, in view of the condition of the New Almaden mines, seems extremely probable.

The quicksilver mines of California have had a glorious past and have returned large profits to their owners. From 1850 to 1891, both years inclusive, they produced 1,590,674 flasks, or 121,696,561 pounds, of quicksilver, valued at $71,508,021. Of this amount the New Almaden mines, owned by the Quicksilver Mining Company, produced 924,659 flasks, or over 58 per cent. In 1881 the product of this company was 42.8 per cent of the total, and in 1891 36 per cent. With the approaching exhaustion of the California mines it would seem that we are likely to see higher prices of quicksilver this year. No figures have yet been compiled showing the world's production of quicksilver in 1891, but the output of the Almaden mines of Spain was probably about 47,500 flasks, against 50,035 flasks in 1890. The mines of Spain and California are the largest producers and turn out about 70 per cent of the total amount of the world's quicksilver.

Saltpetre in East Africa.

IT is reported that Dr. Karl Peters, the well-known African explorer, at present in charge of an expedition in the northeastern portion of German East Africa, has discovered immense deposits of saltpetre, as well as springs containing bromides, chlorides, and sulphides, between the mountain ridge comprised under the name Kilima-njaro and the volcano Donjo ngai (near the so-called soda lake). The territory to which this report refers lies between 2 and 4 degrees of southern latitude and about between 36 and 37 degrees of longitude east of Greenwich. If this report turns out to be true, it will revolutionize very important industries and trade interests. A railroad from the east coast (from Tanga) in the direction of the Kilima-njaro range is now being planned, and would have been constructed even had the new mineral riches not been discovered.

The Wines of the Medoc.

I. THE MEDOC DISTRICT.

THE long tongue of land stretching north from Bordeaux, between the sea on the one hand and the Garonne and Gironde rivers on the other, is called Medoc (*quasi medio aquæ*) because nearly surrounded by water. It is the northern termination of the extensive tract of sand hills and marsh land called "Les Landes," extending from Bayonne north, which changes to a bank of gravel on approaching the left bank of the Garonne, and contains some of the most precious vineyards in the world. The soil is of light pebble, and, indeed, on the spots where some of the best wine is produced it appears a mere heap of quartz mixed with the most sterile quality of earth. The best wine is not produced where the bush is most luxuriant, but on the thinner soils, where it is actually stunted and where weeds disdain often to grow. Yet this very ground is the most favorable to the vine, retaining the sun's heat about its roots after sunset, so that it works in maturing its precious juices as much by night as by day. The accumulation of sand and pebbles of which this soil is composed is apparently the spoils of the Pyrenean rocks, brought down by the torrents tributary to the Garonne and other great rivers, and deposited in former ages on the borders of the sea. At a depth of 2 or 3 feet from the surface occurs a bed of indurated conglomerate, which requires to be broken up before the vine will grow.

The vine is trained exclusively in the fashion of espaliers fastened to horizontal laths attached to upright posts at a height not exceeding 1½ to 2 feet from the ground, running in an uninterrupted line from one end of the vineyard to the other, and generally, that the sun may best do its work, from east to west. Manure is used sparingly, but the plough is driven between the vines four times every season, alternately laying open and covering the roots of the plant. This is performed by oxen, which, with steady and unvarying pace, tread and follow the ranks or furrows without offering the slightest injury to the vine.

The vine begins to produce at 5 years of age, and continues productive for many decades. The older the vine the better the wine, and some vineyards in the Medoc have been yielding fruit for more than two centuries.

II. CLASSIFICATION OF MEDOC WINES.

The wines are classed into *crus* (vineyards, properties), according to their excellence. For example, there are only four vineyards to-day that are adjudged *par excellence*. Naturally the wine of these properties commands the highest price, provided the vintage has not, by some chance, been an abortive one; for, as I shall take occasion to point out later, the year has everything to do with the quality, as well as the quantity, of a crop. *Crus* of the second, third, fourth, or fifth classes give the most excellent wine, preferable, to some palates, to those of the first. The classification, however, is, and always has been, admitted a just one, nor has a revision of the same been deemed necessary since the meeting of the Chambre Syndicale des Courtiers in 1885. The following is the classification referred to:

First Crus.—Château Lafitte, Pauillac; Château Margaux, Margaux; Château Latour, Pauillac; Château Haut Brion, Pessac.

Second Crus.—Mouton, Pauillac; Rauzan Ségla, Margaux; Rauzan Gassies; Léoville Lascases, Saint Julien; Léoville Poyféré; Léoville Barton; Durfort Vivens, Margaux; Lascombes; Gruaud Larose, Saint Julien; Branne Cantenac, Cantenac; Pichon Longueville, Pauillac; Pichon Longueville, Lalande; Ducru Beaucaillou, Saint Julien; Cos Destournel, Saint Estèphe; Montrose.

Third Crus.—Kirwan, Cantenac; Château d'Issa; Lagrange, Saint Julien; Langoa; Château Giscourn, Labarde; Malescot Saint Exupéry, Margaux; Cantenac Brown, Cantenac; Palmer; La Lagune, Ludon; Desmirail, Margaux; Calon Segur, Saint Estèphe; Ferrière, Margaux; Marquis d'Alesme, Becker.

Fourth Crus.—Saint Pierre, Saint Julien; Branaire Duluc; Talbot; Duhart Milon, Pauillac; Poujet, Can-

tenac; La Tour Carnet, Saint Laurent; Rochet, Saint Estèphe; Château Beychevelle, Saint Julien; Le Prieuré, Cantenac; Marquis de Therme, Margaux.

Fifth Crus.—Pontet Canet, Pauillac; Batailley; Grand Puy Lacoste; Ducasse Grand Puy; Lynch Bages; Lynch Moussas; Dauzac, Labarde; Mouton d'Armailhacq, Pauillac; Le Tertre, Arsac; Haut Bages, Pauillac; Pédesclaux; Belgrave, Saint Laurent; Camensac; Cos Labory, Saint Estèphe; Clerc Milon, Pauillac; Croizet Bages; Cantemerle, Macau.

Some of these châteaux produce almost 800 barrels of wine at each vintage, while others produce only 40 or 50 barrels. The prices vary according to the celebrity which the wine enjoys, the *premiers crus* commanding, as a rule, over $200 a barrel immediately after the vintage. Twenty years in bottles readily augment their value to $7 or $8 per quart.

It is singular to remark that many unclassed vineyards producing an inferior wine, though in immediate vicinity to the greater ones, do not in any manner partake of, or share in, their superior qualities. The distance of a few feet makes and unmakes fortunes.

The geographical aspect of the district of Medoc is that of an undulating country, slightly raised above the Garonne, affording here and there peeps of the river between the gentle hills and shallow gullies which intersect it. It abounds, notwithstanding the nature of its soil and altitude, in marshes and stagnant pools which render it unhealthy; so that the châteaux which occur in it are inhabited only for a few weeks each year by their proprietors. Yet the district is populous, a group of cottages being attached to almost every vineyard and inhabited by the peasants who cultivate it. The vineyards are open fields, even those of the greatest value being unprovided with walls or even hedges.

When the grapes begin to ripen, a temporary fence of twisted boughs interwoven with furze is formed round the vines to keep out the dogs, which, strangely enough, are most destructive consumers of grapes. Further, to deter both bipeds and quadrupeds from committing depredations, guards armed with guns are posted on the watch day and night, while bits of paper stuck upon poles announce that the vineyard is strewn with poisoned sausages, and that the grapes themselves are smeared with some deleterious mixture.

III. THE VINTAGE.

The vintage takes place in the latter part of September or early in October. It is then that Medoc presents a scene of bustle, activity, and rejoicing. The proprietors repair thither with their friends and families to superintend the proceedings as well as to enjoy themselves. Vintagers pour in from the left bank of the Gironde to assist in the gathering. Busy crowds of men, women, and children sweep the vineyard from end to end, clearing, like bands of locusts, all before them, while the air resounds with their songs and laughter. From the presses issue sounds of still louder merriment. Upon a square wooden trough stand three or four men, with bare feet and legs stained to a purple that would fill the soul of a cardinal with envy, dancing and treading down the grapes, as fast as they are thrown in, to the melodious notes of a violin. The labor of constantly stamping down the fruit is desperately fatiguing, and without music would progress very slowly. A fiddler, therefore, forms part of every wine grower's establishment, and as long as the instrument pours forth its merry strains the treaders continue their dance.

The date for beginning the grape gathering cannot be fixed. In favorable years, it is usually toward the end of the first fortnight in September, but it is frequently delayed until the end of the month, influenced or governed, as it is, almost entirely by the temperature. The time devoted to the work varies from two to three weeks, according to the extent and importance of the property.

The vintage is gathered in as quickly as possible. As has been just stated, the vintagers, consisting of men, women, and boys, flock at this period of the year to the grape-growing districts, coming from north, south, east, and west, or, in short, from all the neighboring communes. The men receive thirty cents a day in addition to their food; the women and children half that amount. Workers at the press are paid more than the others, as they are looked upon as skilled laborers. Thirty years ago wages amounted to only half as much as they do today. This small army of workers is termed collectively *manœuvres*. There is a *commandant de manœuvres* for every twelve or fifteen rows of vines. His business is to see that the grape cutters do not shirk their work, to take care that they do not leave any grapes on the vines, that they take nothing but what is ripe, pick up the fallen grapes, and that they do not leave dry leaves or any foreign substance in the baskets. The women and children pick the grapes, rejecting all that are decayed or rotten. A cutter is placed at every row of vines, who picks the fruit and puts it into a wooden basket. A man called the basket emptier takes the full basket from every grape cutter, gives an empty one in its place, and deposits the fruit into a headless cask, which, when filled, is drawn by a team of oxen to the cellars.

The cellar, or *cuvier*, where the great fermenting vats are kept, is generally a low building of rough, gray stone, 30 to 40 feet in length, and without flooring. At one end are several broad openings or doors, before which are placed the presses. Through these openings the casks filled with the fruit are slid from the carts. The fermenting vats, ranged in a row, are immense oaken vessels capable of containing from 6 to 20 ordinary casks. When grapes and stalks are separated, the former, after being trodden, are thrown with the juice into the vats, and there left firmly sealed until fermentation is accomplished. Such is the arrangement of the old-fashioned *cuvier;* but for some years past rather different structures have been adopted by some of the more important vineyards. These buildings are two stories, instead of one story, in height. The vats occupy the lower portion, while the flooring of the second story of the *cuvier* serves as a cover that can be opened and closed at will. By means of a crane the casks filled with grapes are raised to the second story, transported by a miniature railway to the press, where, after they have been crushed or picked, according to the system in vogue at the particular vineyard, they are thrown into the vat. The viticulturists of the Gironde are divided as to the value of the two systems. Those in favor of the old system do not consider that the economy of labor, if there be any, in the new sufficiently repays the expense entailed in its installation. It is claimed by the inventor of the new system that, by keeping the vat or vats alone by themselves in the lower compartment, and free from the continual ingress and egress of workmen, the temperature preserves a greater equality and accordingly aids fermentation. The theory is a doubtful one and remains to be proved.

To return to the first operation after the arrival of the grapes at the cellar, which consists of separating the stems, pressing or treading upon the fruit (not always done), and placing the raw product in the vats. The separating is done by aid of a horizontal latticework, either of iron or wood, about 36 inches high and standing upon four legs. This lattice forms, so to speak, the bottom of a flat box, which would or might be compared to the top of a table. Upon it the grapes are manipulated or rubbed by the skilled hands of a workman, so that the berries drop into a trough beneath, while the stalks remain, to be thrown one side or carted away. And here a question presents itself which has given rise to much discussion throughout the wine-producing districts of France, *i.e.*, should the stalks be detached from the fruit or not? The best authorities answer—

1. Whenever it is desirable to impart richness and delicacy to the wine, yes.

2. Whenever the grapes contain little sugar and do not require that strength and color imparted to the wine by the stalks or through the tannic acid contained therein, remove the same.

3. When it is desirable to lengthen the period of fermentation, the stems should be left in the wine.

In order to ascertain the amount of sugar contained in the juice of the ripened fruit, a saccharometer is used. It indicates the density of the must exactly, and the quantity of sugar which it contains approximately. Through its medium may also be determined the most

favorable moment for gathering. In those years when the weakness of the must induces proprietors to add sugar to their wine the saccharometer is employed to determine the proportion required. Sugar, however, is rarely mixed with the wine of the Medoc.

When the grapes have been separated from the stalks, they fall in a great heap upon the platform on which stands the latticed table. This platform, or, more strictly speaking, square trough, is placed on a slightly inclined plane, so that the juice may be carried off, by means of a simple groove, into a receiver. The fruit that remains is either carried directly to the fermenting vat, into which it is thrown together with the new wine, or else it is pressed. If the berries are to remain uncrushed, they give up their juice by the natural process of fermentation in about a fortnight, the skins and seeds sinking to the bottom of the vat. If the grapes are to be trodden, the operation is accomplished by spreading the fruit evenly over the above-mentioned trough, the juice being extracted by the pressure of the bare feet. The liquid extract alone is then put into the fermenting vat, while the skins are introduced into a powerful handpress, where, by the addition of water and alcohol, a second and third quality of wine is made.

Grape skins, like the stalks, contain tannic acid and coloring matter, together with a small amount of resinous sugar. These different elements are separated into their component parts by the process of treading.

Again we are led into the labyrinths of controversy in order to decide whether grapes shall or shall not be trod upon. According to some, treading produces swifter and more equal fermentation, though the wine partakes of a lighter color. Others assert that the treading serves in too great a degree to produce sediment, which naturally impairs the clearness and purity.

A number of machines have been invented to crush the grapes, but none has replaced the human foot; the weight of the human body is enough to crush the grapes, while the sole of the foot is flexible enough not to crush the seeds, which contain an empyreumatic oil injurious to the wine.

When the new wine or the wine and grapes are put into the vats, the latter are hermetically sealed, though provided in some instances with a siphon to carry off the carbonic acid gas generated during fermentation. Great care is taken before the commencement of the vintage to thoroughly cleanse these great receptacles. They are first filled with water and afterwards sponged out with either alcohol or brandy.

After the wine has remained for a short time in the vats it is racked. This may be done at any time between five days and five weeks; a fortnight is about the average. Then, when fermentation is completed, the product is put into barrels. When the 60-gallon casks are ready to receive the year's vintage, the contents of the first vat are drawn off into them, being divided equally, according to the number of barrels employed. The same thing is done with the second vat, so that in the casks the lower stratums of one vat may be mixed with the upper and middle of the other.—Consul Bowles, of Bordeaux, in U. S. *Consular Reports.*

Potassium Biniodate for Volumetric Use.

Both C. Thau (*Zeitschr. f. anal. Chem.*, xvi., 477, and C. Meineke, *Liebig's Annalen*, 1890, 363) have recommended biniodate of potassium (acid iodate of potassium, $KH(IO_3)_2$) as a basis for iodometry, in place of iodine. For this purpose the salt must be fully 100 per cent pure and soluble to a clear liquid. Its percentage of anhydrous iodic acid is determined from the following reaction:

$KH(IO_3)_2$	+	10KI	+	11HCl	=			
potassium biniodate		otassium iodide		hydrochloric acid				
=		KCl	+	$6H_2O$	+	12I		
		potassium chloride		water		iodine		

—the whole of the iodine of the iodate, together with an equivalent quantity of the iodide (which salt may be in excess), being set free. Merck announces that he now prepares both the biniodate and the iodate of potassium of 100 per cent purity for volumetric use.

Cardamoms.*

Zingiberaceous plants are frequently met with in the tropical forest. Large specimens of *Elettaria*, particularly *Elettaria speciosa*, form a constant constituent of the underbrush—for instance, upon Java. The leaves of this elettaria often reach an enormous length, up to 15 and 20 feet, and for this reason serve as a magnificent ornament of the forest.

Elettaria Cardamomum White et Maton is indigenous to Ceylon, but not to Java. Its cultivation is carried on in a number of districts, the total amount of the harvest of 1891 being estimated at 443,000 pounds.

In British India cardamoms are cultivated chiefly in Coorg and Mysore, 2,500 to 5,000 feet above sea level. Some of the Mysore plantations have an extent of 1,000 acres. The cultivation was first commenced in 1871 by a few coffee planters.

Upon Ceylon the Dutch collected cardamoms about the middle of the eighteenth century. At that time the export amounted to 7,000 to 8,000 pounds. Subsequently it fell off considerably, amounting to only 5,500 pounds in 1813. Some years ago the cultivation was started in nearly all districts below the level of 4,000 feet, which resulted, of course, in overproduction and a great decrease in value of the product. In 1887 to 1888 there were under cardamom cultivation 4,572 acres. The production amounted to 250,000 pounds from regular plantations, and 100,000 from the so-called kampong cultivation [crude country farming].

There are three kinds of cardamom to be found in Ceylon: the indigenous, the Malabar, and the Mysore. All three are probably only varieties of one and the same species.

"Malabar" cardamom has a pale-green, "indigenous" a red stem of dark color near the bottom. The fruit of the "indigenous" cardamom (in Singhalese, "ensal") is known in commerce as "Ceylon natives," and less esteemed than the "Malabar" (called "rota ensal"). The former is longer than the latter. The Mysore variety is more robust than the others. It grows at higher altitudes, is more hardy, and has larger, not velvety, leaves.

Good soil and moisture are the chief requisites for a successful cultivation. Tropical valleys are the most favorable localities. Some shade appears to be necessary, and the access of winds must be guarded against.

Cardamoms ripen very irregularly. When growing in stiff loam and exposed to too much rain, the plant grows vigorously but bears no fruit.

When a plantation is started in the forest, the undergrowth is first removed and the forest thinned out so as to still preserve the requisite amount of shade. The soil is drained by suitable trenches where required, and all weeds carefully removed.

Planting is usually done in rows, so far as the remaining trees permit. In good soil plants are set at distances of 7 feet. Propagation is made mostly by planting pieces of the tuberous rhizome, rarely by seeds. A special part of the plantation is usually reserved for propagating purposes. The plants raised there are taken completely out of the ground, and the root divided into the several tuberous sections, which are either planted at once or first developed in a nursery and then transplanted. Plants raised from seeds, of course, require a longer time before they bear fruit, but the seed method has the advantage that the planter is always sure of the variety, while he has no such assurance when he has to buy pieces of rhizome in the market, particularly from natives.

The pieces of rhizome are laid immediately under the surface of the soil. After three or four years the plants produce fruit, but a full harvest is not obtained until the fifth year. They continue bearing for six or seven years, and sometimes longer. The usual yield of an acre of five-year-old plants is estimated at 300 pounds. The plants flower throughout the whole year. Fruit and flower are always seen on the plants at the same time. But the harvesting is confined to the time between the end of August and the beginning of the next April, more particularly to the last three months of the year.

The capsules are collected when they have become firm,

* Translated (partly in abstract) from "Indische Heil- und Nutzpflanzen," von Dr. Alex. Tschirch.

but before they have become entirely yellow, in which latter condition they are apt to burst on drying. Fully ripe fruits separate easily from the stem, those nearly ripe do not. A coolie can gather as much as 12 to 15 pounds per day. Four pounds of fresh capsules furnish 1 pound of dry.

In order to impart a yellow straw color to the capsules, they are subjected to a so-called "curing" process. They are first placed for a short time into cold, and then for one minute into boiling water; next they are exposed to the sun, three hours during the morning and two during the afternoon, which bleaches them. In some mills at Colombo the fruits are sometimes treated with sulphur fumes. When the fruit is picked the stems still adhering are broken off.

Ethereal oil of cardamom is at present prepared exclusively from Ceylon cardamoms.

Thiophene Diiodide.

EDUARD SPIEGLER reports that thiophene diiodide may be used in place of iodoform.

Thiophene diiodide has the composition $C_4H_2I_2S$, is in form of crystalline plates, and easily volatilized. It melts at 40.5° C. Its odor is aromatic and not disagreeable. It is insoluble in water, but soluble in ether, chloroform, and warm alcohol; difficultly soluble in cold alcohol. It contains 75.5 per cent of iodine and 9.5 per cent of sulphur, both in direct combination with carbon.

A 10 per-cent thiophene diiodide gauze is prepared in the following manner:

Dissolve 50 parts of the diiodide in a mixture of 500 parts each of alcohol and ether, and add 10 parts of glycerin. Then impregnate the gauze with this.

It is suggested to add to the liquid 2 or 3 parts of a saturated alcoholic solution of safranin, in order that the equable distribution of the antiseptic solution through the gauze may be controlled.

Artificial Human Milk.

HUMAN milk differs materially in its composition from cow's milk, for which reason there have been numerous propositions and formulas offered for altering the proportions of the constituents of the latter so as to make it approach more nearly to woman's milk.

The average composition of human and of cow's milk is as follows:

	Human.	Cow's.
Casein	2.7	4.2
Butter	3.5	3.8
Milk Sugar	5.0	3.8
Salts	0.2	0.7
Water	88.6	87.5
	100.0	100.0

Mr. T. Maltby Clague, from whose paper this notice is taken, having occasion to prepare an artificial human milk, after some experiments adopted the method advocated by Soxhlet, with some modifications (see below). The original formula provides for bottles fitted with rubber corks, but in Mr. Clague's case the expense of rubber corks stood in the way of their use. On the other hand, ordinary corks presented many difficulties in the obtaining of a perfect hermetical sealing. Chief among these difficulties was the fact that cork compressed while hot and wet into the neck of the bottle did not retain its elasticity sufficiently to remain air-tight. It was found feasible to produce results which would remain good for a week or so; it was much more difficult to secure its keeping for longer periods. Samples have, however, been manipulated which remained sweet and good for over two years.

Several children were put upon this food as made in our laboratory, and the results were of a most satisfactory character, the testimony of parents and medical attendants being that children were able to retain or assimilate the food who could not retain or assimilate any other milk food, while the development of the children was steady and gratifying. The profit obtainable was not, however, sufficient to compensate for the trouble involved, and a simple recipe for its manufacture was given to several parents, who have been able, with the implements and intelligence contained in their kitchens, to produce satisfactory results. This was:

New Cow's Milk	3 pints.
Cream	4 ounces.
Milk Sugar	3½ "
Water	2 pints.

Dissolve the milk sugar in the water and mix all together. Put into bottles filled to shoulder only, place them on the tray of a fish kettle, surround with water, and place on the fire. Allow the water to boil for half an hour, so that the expansion of the milk may be fairly complete, then cork, and allow the boiling to continue for another half hour, when the operation is complete.

A sample of the kitchen-prepared article has been submitted to analysis, with the following results:

Casein	2.6
Butter	3.4
Milk Sugar	4.8
Ash	0.4
Water	88.1

A comparison of the digestibility of the three milks—that is, the artificial human, the natural supply, and cow's milk—has also been attempted. A sample of each was submitted to the action of rennet. In the case of cow's milk the curd consisted of one large clot, while in the other two it was much broken up. To each a few minims of acid glycerin of pepsin were added, and they were placed in a water bath at 140° F. for half an hour. Solution was almost complete in the case of the human and the artificial, while the cow's milk was far behind the apparent solution.—*Pharm. Journ.*

Bergapten, the Stearopten of Oil of Bergamot.

THIS substance separates as a crystalline magma when the ethereal oil obtained from the rind of the fruit of *Citrus Bergamia* is kept for some time. It may be purified by sublimation or by recrystallization from alcohol, when it forms hard, white, silky needles, which are tasteless and odorless at ordinary temperatures, but evolve aromatic vapors when heated. It is slightly soluble in cold alcohol and in hot water, dissolves in hot alcohol, acetic acid, chloroform, benzene, and phenol, and melts at 188° with partial sublimation. Elementary analysis and a determination of its molecular weight, by observing the depression of the freezing point of a solution in phenol, show that it has the molecular formula $C_{12}H_8O_4$. Aqueous and alcoholic potash, acetic anhydride, phenylhydrazin, and boiling hydrochloric acid are all without action on the compound, which, however, as shown by the action of hydriodic acid and acetic anhydride, contains three methoxyl groups.—C. POMERANZ in *Monatsh.*, 12, 379, and *J. Chem. Soc.*

Moss and its Adaptability to Pharmaceutical Purposes.

THE following paper was read by S. A. Walton at a recent meeting of the London Chemists' Assistants' Association:

The moss order, from a botanical point, is one full of interest to the student, comprising, as it does, over 1,250 species, and its uses are so varied and numerous that it would take a far greater time than I have at my disposal to enumerate them. I therefore desire to draw your attention to some of the uses it is put to pharmaceutically and medically only, and to the suborder, Sphagnaceæ, the bog moss, I wish to confine my remarks this evening.

Until within a comparatively short time since, no particular attention has been devoted to this plant * from a medical point. In 1884 a summary of its properties and qualities as an antiputrescent was given in the *Pharmaceutical Journal*, and in 1887 Mr. Lediard, the surgeon of the Cumberland Infirmary, contributed a paper to the *British Medical Journal* respecting the results he had obtained in using it as a wound dressing and absorbent. It is chiefly, though, to Drs. Hagedorn, Liesrink,

*The order Sphagnaceæ comprises only *one* genus, viz., Sphagnum, of which about 20 species are known.—ED. AM. DRUGG.

Mielek, and Rudolphi that its use as an antiseptic and absorbent dressing of a high degree has been established, and it was owing principally to these gentlemen that the Prussian Minister of Interior Affairs in 1888 recommended its use to the hospital staffs wherever practicable, and it is to a German house which has placed the moss on the market in a suitable condition for surgical use that our thanks are due.

In preparing it for commercial use the moss is first carefully gathered, dried at a low temperature, and compressed into sheets of various sizes, and in this form is known as "Mooss-Pappe," or "moss paste." A second variety is the "moss felt," in which the moss is not so closely compressed, and in this form is more suitable for bandages and pads than the first named. A third variety is the "moss siftings," being the small, dried moss in a loose condition, the principal use for which is the disinfection of closets and similar purposes.

The antiputrescent property of peat moss has long been known, though probably the only account to which it has been turned by pharmacists has been the preservation of leeches. It is to the further development of this property my attention has been directed, in the attempt to utilize it as a means for disinfecting, odorizing, and deodorizing. I have referred to its use as a perfuming agent in a previous paper, and I am of opinion that, if judiciously used, we have one of the finest means for purifying or perfuming the atmosphere that has yet been introduced.

As a means for roughly drying precipitates the moss paper is especially useful. The filter containing the washed precipitate being placed upon a sheet of this compressed moss, the moisture is abstracted to a very sensible degree, thus materially lessening the amount of time necessary to obtain a dry product.

Its use in leech jars (before referred to) or for sending leeches through the post is no doubt well enough known to need any repetition on my part.

In conclusion, I would draw the attention of members to the vast use an intimate knowledge of botany is to the pharmacist, and I feel sure there yet remains a very large field open for the utilization of natural products, and which if we only examine will repay us both mentally and monetarily.—After *Pharm. Journ.*

The Manufacture of Caustic Soda and Chlorine by Greenwood's Process (Electrolysis).

THE editor of the *Chemical News* writes (January 15th) about this new process as follows:

Mr. Greenwood, the inventor, has turned his attention to the electrolytic decomposition of common salt in connection with the extraction of gold from its ores by the chlorine process, and certainly, as far as we can judge from a necessarily brief examination, he has made a considerable step in the application of electric currents in industrial chemistry. The raw material operated upon is common salt, which is dissolved in water, and the brine, without any purification or filtration, is at once submitted to a current of about 4.4 volts and an intensity of 10 ampères per square foot of electrode.

The first difficulty to be overcome was to find a material for the anodes which should resist the action of nascent chlorine. The inventor has selected retort coke, made up into plates and rendered impervious by a composition the nature of which is not made known. To increase the conductivity of the anode, and to give it greater firmness, it is provided with an iron core. This core is completely protected from contact with the chlorine by means of the composition just mentioned.

The next great difficulty is to prevent the chlorine and soda from recombining. For this purpose Mr. Greenwood has devised a peculiar diaphragm; it consists of slips of slate fixed horizontally [should evidently read "slantingly"], like the laths of a Venetian blind, the interstices being filled with asbestos. If a molecule of chlorine impinges upon the slips, it could pass the diaphragm only by descending, and, as its specific gravity is lower than that of the liquid, such a descent cannot take place.

The cathodes are made of cast iron, upon which caustic alkalies have practically no action. The liquid, after passing through a descending series of electrolytic troughs, is pumped back to be further submitted to the action of the current. The chlorine gas is at once conveyed away as liberated and passed into milk of lime, by which it is absorbed; or it may be applied to any other purpose as required. Thus it may be passed into lead chambers for the production of chloride of lime in the ordinary manner. This process, being perfectly familiar to chemists, is not shown in the experimental works now in action.

The caustic soda can, if needed, be converted into the solid form by evaporation, which is effected by the usual process. During this operation the common salt which has escaped decomposition—about 20 per cent, which would be very objectionable, *e.g.*, in the manufacture of soap—is eliminated by subsidence.

The production of caustic soda and of chlorine by this process is estimated by the inventor and by the experts who have been consulted to involve an economy of 50 per cent as compared with the present methods. If this calculation holds good on the large scale, and if no drawbacks reveal themselves, we may consider that the Leblanc alkali process is within a measurable distance of its end.

Preparation of Salol.

IN chemical works (f. i. Beilstein's "Handbuch," 2d ed., 2, 951) it is stated that when salicylic acid is cautiously heated it sublimes without decomposition, but that when rapidly distilled it is partially decomposed into carbon dioxide and phenol; and that it suffers the same decomposition when it is slowly heated with water, in a sealed tube, at a temperature between 220° and 230° C.

These statements are pronounced by Wierp and Ernert (in a patent-specification relating to a new method of manufacturing salol) to be incorrect, since the decomposition does not depend upon the gradual or rapid heating, but merely upon the temperature to which the acid is heated.

As long as salicylic acid is subjected to a heat lower than its melting point it sublimes without decomposition; above its melting point it always decomposes. Wierp and Ernert have now ascertained that when the acid is heated to a high temperature (about 160° to 240° C.) it is decomposed into carbonic acid gas (CO_2), water, and *salol*, provided the generated water is distilled off during the heating, and excess of air prevented as much as possible.

The patentees give the following description of the process:

Pure (or even crude) salicylic acid is heated for about four hours in a bath at a temperature of 220° to 230° C. The vessel containing the acid, consisting of glass or other suitable material, has a narrow neck extending so far out of the bath that the aqueous vapors arising during the reaction cannot fall back again, but are condensed in a sort of alembic, from which the water can run off. By carefully regulating the temperature of the neck of the vessel, nothing else will escape but water and carbon dioxide. To exclude air, the vessel is filled, previous to the commencement of the reaction, with an indifferent gas (such as carbon dioxide), and a weak current of the same passed during the reaction.

The generated salol is washed with water and, if necessary, also with solution of soda, and then recrystallized from alcohol or another suitable solvent.—After *Pharm. Centralbl.*, No. 12, 289.

The Purity of Platinic Chloride.—In Krauch's work on the testing of reagents for their purity, the only requirements prescribed for platinic chloride are that it should be completely soluble in absolute alcohol and that when ignited the residue should yield nothing soluble to dilute nitric acid. A. F. Holleman now reports (in *Chem. Zeitung*, 1892, No. 3) that he has met with a platinic chloride, obtained from one of the best-reputed manufacturers, which responded to the above tests, but was found, when used for the quantitative determination of potassium, to yield such discrepant results that some other impurity was suspected to be present. On close investigation it was found to contain sulphuric acid.

Notes on Litmus and other Indicators.

AT a recent meeting of the Chemists' Assistants' Association of London, Mr. A. H. Allen read a paper on "Neutrality," in the course of which he discussed the merits or drawbacks of various indicators, and pointed out their proper sphere of application. We publish that portion of the paper referring to this subject after the *Chemist and Druggist* (January 23d):

Litmus.—Litmus is the most available of natural coloring matters, and in many instances is the best indicator of neutrality that can be used. The end reaction is most readily observed (when daylight cannot be used) by employing the monochromatic light of an incandescent sodium compound. Mr. Allen also briefly dwelt on the properties of cochineal and turmeric, and proceeded to speak of

Synthetic Indicators.—Organic research, he said, has recently afforded a number of indicators of neutrality which, in some cases, replace litmus with advantage. There may be mentioned methyl orange, phenolphtalein, phenacetolin, Congo red, alizarin, and others. Their chief recommendation is that they cannot be employed indiscriminately as substitutes for litmus—they frequently give perfectly sharp end reactions where the litmus indications are very indefinite. They are generally of an acid character, and owe their value to the fact that solutions of their alkali salts have a color distinct from the free acid or hydrogen salt. In *phenolphtalein* we have an invaluable color acid, a body the solution of which is practically colorless, but whose soluble metallic salts yield in a solution a brilliant crimson color. By means of this indicator and caustic alkali the strengths of very feeble acids—either in aqueous or alcoholic solutions—can readily be ascertained. It is of great value for the estimation of acetic, benzoic, and other organic acids, and for insoluble fatty acids, such as oleic and stearic (in the latter cases, of course, using alcoholic solutions). Phenolphtalein is also available for titrating feeble mineral acids, such as hydrocyanic, carbonic, and arsenious acids, noting that the standard alkali must be caustic and free from carbonate. This is often difficult to insure, and it would be found that by far the best standard alkaline solution for use with phenolphtalein is

Decinormal Baryta Water.—The substance which Mr. Allen recommended for setting the standard baryta solution is crystalline quadroxalate of potassium ($KHC_2O_4 \cdot H_2C_2O_4$); 0.25 Gm. is weighed out and dissolved in warm water, phenolphtalein (1 in 500 of alcohol) added, and the baryta water run in till the pink color becomes permanent. The white precipitate of barium oxalate, which subsequently forms, affords a delicate background for viewing the end reaction.

Phenolphtalein can be advantageously used to determine the amount of acid in a sample of paregoric. Take 20 Cc. of paregoric, make alkaline to litmus, evaporate off the spirit, and extract the camphor and oil with ether. Benzoic acid is precipitated from the aqueous liquid on addition of hydrochloric acid. Dissolve in ether, and wash this solution with water until the washings no longer redden litmus, and place in a cylinder with 5 Cc. water to which 1 drop of phenolphtalein solution has been added. On running in $\frac{N}{20}$ or $\frac{N}{50}$ caustic soda or baryta, and agitating between each addition, the amount of benzoic acid can be readily and accurately determined, the meconic acid from the opium being insufficient to interfere.

Mr. Allen next mentioned an application of the benzoic-acid process in the estimation of aconite alkaloids, as suggested by him at the British Pharmaceutical Conference. There are some bodies of an acid character which have little action on phenolphtalein, such as phenol and its allies. The behavior of morphine with phenolphtalein was especially mentioned because at the British Pharmaceutical Conference at Cardiff Mr. F. W. Short stated that morphine reacted as an acid to phenolphtalein. He (Mr. Allen) wrote to Mr. Short as to the source of his information, and the reply was: "I cannot remember where I saw the statement . . . but it was to the effect that it might be made use of quantitatively, as the red color only appeared when 1 molecular weight of NaHO had been added for each molecular weight of the morphine." In consequence of Mr. Short's statement, he had directly experimented between morphine and phenolphtalein, and in all cases he found the acidity of the former to the latter extremely trifling. The statement that morphine reacts quantitatively as an acid to phenolphtalein is, therefore, a mistake, and probably Mr. Short was confusing the behavior of the two with that of

Poirrier's Soluble Blue.—This substance, not now obtainable, was found, a few years ago, to indicate the presence of the very weakest acid. Morphine, phenol, and chloral react as acids to Poirrier's blue; resorcin also acts as a dibasic acid. It is of interest to note that phenolphtalein and Poirrier's blue, which might be used as indicators of very feeble acids, are quite insensible to the majority of the alkaloids and organic bases. Aniline and pyridine, both strong bases, are insensitive to phenolphtalein. The same may be said of quinine, strychnine, and aconitine. Hence the salts of these bases, such as aniline hydrochloride, quinine sulphate, etc., can be titrated with caustic alkali and phenolphtalein, just as if the respective acids were in the uncombined state; a curious exception to this general behavior being that presented by atropine and its isomers, which in the free state strongly redden phenolphtalein. Phenolphtalein, being gradually decomposed by ammonia, cannot be used for titrating that base.

An indicator presenting the general properties of phenolphtalein, without this inconvenience, is available.

In *Methyl Orange* we have perhaps the best indicator for weak bases. This coloring matter is the sulphonic acid of dimethylamidoazobenzene. Its solution has a yellow color, but the free acid is *red*. Hence the addition of an acid sufficiently powerful to liberate the "helianthic acid" from its salts results in change of color from yellow to red. The free acid of methyl orange is only sparingly soluble, and feeble acids, like carbonic and hydrocyanic, are unable to decompose its salts, acetic and oxalic acids only imperfectly so, whilst with sulphuric, hydrochloric, and nitric complete decomposition occurs. With phosphoric acid decomposition ceases rigidly, with the formation of a compound analogous to Na_2HPO_4, a result held in contrast to the behavior of sodium phosphates with phenolphtalein, with which indicator Na_2HPO_4 is neutral, whilst with Poirrier's soluble blue the compound Na_3PO_4 is indifferent.

With methyl orange as an indicator, standard acids may be set with sodium carbonate or borax, and the "temporary hardness" of water and the "total alkali" of soda ash may be quickly determined. Also, the alkaloids and organic bases may be titrated with methyl orange and standard mineral acid with great facility. There are two kinds of methyl orange in commerce—good and bad. The color matter known as "Orange II.," or "beta-naphtol orange," behaves in a manner exactly opposite to methyl orange, the characters of which have been given.

Dimethylazobenzene, the coloring matter of which methyl orange is the sodium sulphonate, has also been recommended as an indicator. Its behavior is similar to that of methyl orange.

Congo Red, an indicator of the same class, is inferior to methyl orange.

The employment of *iodeosine* as an indicator by Mylius and Foerster was briefly referred to (see this journal, 1891, pages 352 and 358).

By way of explaining the different behavior of various indicators, it had been pointed out that an acid which could be titrated accurately with methyl orange is one the heat formation of the solid potassium salt of which exceeded six to seven calories. With Poirrier's soluble blue still feebler acids could be titrated.

Alkaloids.—The behavior of the alkaloids and organic bases with indicators has been imperfectly studied. It is stated in the text books that certain alkaloids are alkaline, but it is only recently that their estimation by titration has been attempted. When this is desired the best indicator is *methyl orange*, by which a sharp end reaction can be obtained. The best method of precedure is to dissolve the alkaloid in ether, chloroform, or other immiscible solvent. Next place the solution in a stoppered cylinder with water colored with methyl orange. On running in the standard acid with constant agitation the

end reaction is readily observed, the red color presenting a marked contrast to the coloring matter of the immiscible layer. The following table contains all the available information on the subject of titration of alkaloids, speculative statements being omitted. In the column headed "*Methyl orange*" an asterisk is placed before the word "alkaline" (*alkaline) where accurate titrations can be made.

Substance.	Formula.	Methyl orange.	Phenol-phthalein.	Litmus.
Methylamine	CH_5N	* Alkaline	....	Alkaline.
Trimethylamine	C_3H_9N	* "	....	"
Aniline	C_6H_7N	"	Neutral	Neutral.
Pyridine	C_5H_5N	* "	"	Alkaline.
Quinoline	C_9H_7N	* "	....	....
Antipyrine	$C_{11}H_{12}N_2O$	* "	Neutral	Neutral.
Coniine	$C_8H_{17}N$	* "	Alkaline	Alkaline.
Nicotine	$C_{10}H_{14}N_2$	* "	"	"
Aconitine	$C_{33}H_{45}NO_{12}$	* "	Neutral	"
Atropine	$C_{17}H_{23}NO_3$	* "	Alkaline	"
Cocaine	$C_{17}H_{21}NO_4$	* "	Neutral	"
Morphine	$C_{17}H_{19}NO_3$	* "	Faintly acid	"
Codeine	$C_{18}H_{21}NO_3$	* "	Alkaline	"
Narcotine	$C_{22}H_{27}NO_7$	....	....	....
Strychnine	$C_{21}H_{22}N_2O_2$	* Alkaline	Neutral	Alkaline.
Brucine	$C_{23}H_{26}N_2O_4$	* "	"	"
Cinchona bases.	....	....	....	"
Caffeine	$C_8H_{10}N_4O_2$	....	....	....
Urea	CH_4N_2O	Neutral	Neutral.	Neutral.

Purified Litmus.

J. LÜTTKE recommends to purify litmus in the following manner: Reduce 100 Gm. of litmus to a moderately fine powder and extract it three or four times with warm water. Concentrate the united extracts to about 200 Cc., acidulate strongly with hydrochloric acid (about 20 Gm. of a 25-per-cent acid), and subject the solution to dialysis in a parchment dialyzer until the whole of the hydrochloric acid has been extracted. The litmus solution remaining in the dialyzer is now exceedingly sensitive. One drop of a decinormal alkali solution in 100 Cc. of distilled water instantaneously produces a decided blue color, which is equally rapidly changed to red by a drop of decinormal acid applied in the same manner. [The author's paper, which is before us in abstract only (in *Pharm. Centralhalle*, 1892, 59), probably stated that 1 drop of a solution of 1 drop of the decinormal solutions in 100 Cc. of water produced the change.]

If it is desired to preserve the coloring matter for some time, the solution should be further concentrated, then precipitated with absolute alcohol, and the coloring matter, which will be gradually precipitated, dried.

Or the concentrated solution may be spread upon plates of glass and dried in air free from carbonic acid. The dried scales are easily soluble in water.

Note on Iodine Preparations.

THE following paper, read by W. G. Mackenzie at an evening meeting of the Pharmaceutical Society held at Edinburgh, contains some useful hints regarding the rapid solution of iodine in alcohol:

The point I wish to bring forward in this note is so small that I almost feel as if I ought to make an apology for doing so. It is quite probable that the suggestion I have to make may have occurred to others who have had experience in the making of iodine solutions. I have been induced to direct attention to it from having observed that all the pharmacists with whom I have come in contact made the official galenical preparations of iodine by either one or the other of two methods. One method is to put all the ingredients into a bottle and shake briskly for a few minutes, renewing the agitation occasionally until complete solution is effected, which may occur any time between one and three days. The other method is to rub all the ingredients together in a mortar until dissolved. The objection to the first method is the great waste of time in effecting solution, a point of some consequence to a busy pharmacist, and very annoying when, from any cause, the preparation is required on short notice. The objections to the second method are the uncleanliness which is always apparent, and the inevitable loss of iodine. I have also observed that students preparing the volumetric solution of iodine land themselves in a similar difficulty as to the solution of the iodine. This difficulty is a necessary sequence, one might say, of the official (British Pharmacopœia) directions, which stipulate that the ingredients are to be gently agitated together until solution is effected. Those who have made the solution in this way will know that it is very tedious work getting the whole of the iodine dissolved. What I have to suggest is that, by simply adding a very small quantity of the solvent to the iodine and iodide of potassium, and allowing them to lie in contact for a few minutes without any agitation (or, at most, a slight rotary motion at the end of five minutes), complete solution of the iodine occurs, and this solution may then be diluted to the required volume by the addition of the remaining portion of the solvent, be it spirit, water, or glycerin. The only shortcoming in the above process, as far as the British Pharmacopœia liniment and tincture are concerned, is that while the iodine is dissolved, the iodide of potassium does not dissolve so rapidly. To overcome this difficulty I make a further suggestion involving a slight modification of the official formulas in the case of these preparations. The following, I have found, will meet the requirements of the process I suggest:

Linimentum Iodi, British Pharmacopœia.

Take of—

Iodine	1¼ ounces.
Iodide of Potassium	¾ ounce.
Distilled Water	1 fluidounce.
Glycerin	½ ounce.
Rectified Spirit	9 fluidounces.

Add the iodide of potassium to the water and glycerin previously mixed, allow to stand without agitation till dissolved, then add the spirit and shake together.

Tinctura Iodi, British Pharmacopœia.

Take of—

Iodine	½ ounce.
Iodide of Potassium	½ "
Distilled Water	1 fluidounce.
Rectified Spirit	19 ounces.

Add the iodine and iodide of potassium to the water, allow to stand without agitation till dissolved, then add the spirit and shake together.

In the case of Liquor Iodi and the volumetric solution of iodine, it is only necessary to suggest that the directions read: "Add the iodine and iodide of potassium to an equivalent weight of water, allow to stand without agitation till dissolved, and dilute with water to the required volume."

By following this method I have found that all the preparations above referred to can be made in a few minutes, and avoiding entirely the use of a mortar, the objections to which I have already pointed out. I have also found this process very useful in dispensing a frequently prescribed iodine preparation known as "Morton's Iodo-glycerin Solution," the formula for which, as given by Martindale and Squire, is:

Iodine	10 gr.
Iodide of Potassium	30 "
Glycerin	1 ounce.

It is difficult to prepare this solution in a mortar, and I have frequently seen it dispensed with solid particles of iodine in suspension, which would be likely to cause undue irritation when applied to the throat. By adding 25 minims of water to the iodine and iodide of potassium, allowing it to stand till dissolved, and making up to 1 ounce with glycerin, a perfect preparation is obtained in a very few minutes. I consider the addition of so small a quantity of water here quite permissible, as it interferes only very slightly with the viscidity of the preparation, which is the important feature in the use of glycerin as a medium for the application of iodine to the larynx. I should also say that I do not think there can be any ob-

jection on therapeutic or pharmaceutic grounds to the substitution of a small quantity of water for rectified spirit in the official liniment and tincture, or to the slight addition to the quantity of potassium iodide in the case of the former preparation, this addition being necessary to effect solution of the iodine in the quantity of water I suggest.—*Pharm. Journ.*

Fluid Extract of Cascara Miscible with Water.

AT the last meeting of the London Chemists' Assistants' Association Mr. John Moss read a paper entitled "Cascara Miscible Liquid Extract."

The author first referred to a paper on cascara read by him at the British Pharmaceutical Conference at Cardiff, in which he drew attention to the deposit which appeared during evaporation of a decoction of cascara used in making the official fluid extract—a deposit which was not taken up by the spirit added to preserve the preparation. Another deposit, which formed in the finished liquid extract, was also noticed. These two deposits were compared and found to be identical. It was further shown at the same time that water and proof spirit severally exhausted cascara of all the active ingredients, but whilst proof spirit retained all in solution, water alone or with one-third rectified spirit deposits as stated. Exhausted with either of these menstrua, an exceedingly nauseous preparation resulted, and in each case dilution with water gave an unsightly muddiness. Considering these facts, it occurred to the author that it was possible to eliminate the cause of the deposit without interfering with the value of the medicine. With this object he instituted a methodical research, with results that were successful beyond anticipation; for not only was it found possible to make a fully active preparation that would not deposit, but one that would bear diluting with water, and one from which the nauseous taste was entirely eliminated, this by means of water only, with spirit added to preserve it. Process:

*Extractum Cascaræ Sagradæ Liquidum Miscibile.**

Cascara Sagrada (one year old) in No. 20 powder	1 pound.
Rectified Spirit	4 fluidounces.
Distilled Water	a sufficiency.

Moisten the bark with a portion of the water, allow to remain a few hours to soften and swell, place loosely in a percolator, and percolate with more water until exhausted. Evaporate on a water bath to the consistence of a brittle extract, which when cold treat with cold water until thoroughly disintegrated. Allow this to stand and settle. Strain through flannel, and evaporate the strained liquor to 12 fluidounces and add the rectified spirit when cold. Specific gravity at 60° F. = 1.050.

Here we have a preparation that does not deposit either on keeping or on diluting with water, and which, although bitter, is free from nauseous taste and smell. The deposit has been consigned to the rubbish heap instead of to the patient, and the patient loses nothing. On analysis this deposit was found to consist of—

1. A yellow resin insoluble in alcohol of 70 per cent.
2. A crystalline substance soluble in 70-per-cent alcohol, which gave a dark-brown color with caustic potash and with sulphuric acid (specific gravity 1.843).
3. A large quantity of a red-brown-colored body, soluble in 70-per-cent alcohol, from which it could be obtained by evaporation as a cake which easily crumbled on drying. This gave a bright-red color with caustic potash and with sulphuric acid (1.843).
4. A substance soluble in 70-per-cent alcohol, in water, and acetic acid.

The body 3 was treated with chloroform and two substances were obtained—

1. A solution which yielded on evaporation a yellow crystalline deposit possessing the odor of cascara to a marked degree.
2. A dark, cindery portion which seemed, even after drying, to retain the chloroform with great tenacity. On boiling this with dilute sulphuric acid Fehling's solution was reduced.

* We give the proportions as printed in the original. The reader will be able to apply the formula to our weights and measures, or to metric terms.

The substance 4 was chiefly a glucoside and resin. The author had failed to obtain it in an approximately homogeneous condition, but he was of the opinion that 4 was the cause of the disturbing influence in cascara preparations, and that by decomposition, or otherwise, it was able to render some of the other constituents of the bark insoluble.

Solid extract of cascara may be prepared by proceeding as for liquid extract, only, instead of adding spirit to the strained liquid, the latter is evaporated to the necessary consistence on the water bath.

By adopting these preparations instead of the official ones (British Pharmacopœia), general satisfaction would be given. The therapeutic effects were certain; 20-minim doses every morning would be found more beneficial than one larger dose, and a little fluid extract of licorice (prepared *in vacuo*) or some elixir of saccharin (British Pharmacopœia C.) would be found to add to the elegance of the liquid preparation.—*Chem. and Drugg.*

Magnitude of Molecules and Light Waves.

WHEN we hear that the successive vibrations in a light ray of average wave length number about 600 million of millions in a second, the natural impression is that they must be submicroscopic in dimensions.

This, however, is far from being the case. The actual length of the waves in such a ray is about $\frac{1}{55000}$ of an inch. The parallel rulings on the glass plates known as Nobert's test plates, which are employed to test the defining powers of lenses, have been not only "resolved" but photographed when only $\frac{1}{150000}$ of an inch apart (*i.e.*, 150,000 to the inch). In other words, four such lines, spaced as in these rulings, could be drawn within the length of an average wave of light. This shows that the size of the ultimate particles or molecules of the glass must be very much smaller than the waves of light, since several furrows may be ploughed through them within the width of an average wave.

All these magnitudes are, however, far beyond our direct perception or powers of realizing, but we may at least get at some sense of our shortcomings in power of conception from the following:

A maker of these "test plates," named Webb, many years ago, made for the Army Medical Museum at Washington a specimen of microscopic writing on glass. This writing consists of the words of the Lord's Prayer, and occupies a rectangular space measuring $\frac{1}{244}$ by $\frac{1}{441}$ of an inch, or an area of $\frac{1}{129654}$ of a square inch.

The lines of this writing are about as broad as those on the test plates, which are $\frac{1}{50000}$ of an inch apart. They are, therefore, about as wide as average light waves. Now, then, to get some idea of the magnitude or minuteness of this writing.

There are in the Lord's Prayer 227 letters, and if, as here, this number occupies the $\frac{1}{129654}$ of an inch, there would be room in an entire square inch for 29,431,458 such letters similarly spaced.

Now, the entire Bible, Old and New Testaments, contains but 3,566,480 letters, and there would, therefore, be room enough to write *the entire Bible eight times over on one square inch of glass*, in the same manner as the words of the Lord's Prayer have been written on this specimen.

Such a statement, without doubt, staggers the imagination, but the figures are easily verified and are certainly correct, and the whole statement at least serves to bring home to us the limited nature of our mental capacities as compared with the facts of the universe.

It also furnishes an interesting suggestion in a very different subject.

It has been often stated that a physical basis of memory may exist in permanent structural modification of the brain matter constituting the surface of the furrows. In a highly developed brain this surface amounts to 340 square inches, and it would, therefore, appear that the entire memories of a lifetime might be written out in the English language on such a surface, in characters capable of mechanical execution, such as those of the Webb plate at Washington. See the *Lens*, December, 1873, p. 225 (Chicago). Also Trans. of Micro. Soc. (London), 1862, iii., vol. x., p. 69.—PRESIDENT MORTON in the *Stevens Indicator.*

On the Use of Areometers.

FR. MALY, of Vienna, has ascertained that the apparent inaccuracies caused by employing areometers for determining specific gravities are due to the presence, upon the glass stem of the areometer, of minute traces of fat, and he points out a method by which the readings of specific gravity on the scale of an areometer may be obtained with perfect accuracy (*Zeitsch. f. Intrumentenkunde*, 1892, 61). We give an abstract of his paper.

Under ordinary circumstances, the accuracy of a determination obtained by means of an areometer *appears* to depend upon the nature of the liquid in which it is immersed. It is a well-known fact that the readings obtained in certain liquids, such as strong alcohol, are always sharp and satisfactory, while in other liquids they are uncertain in spite of the care with which the areometer has been cleaned. This is especially the case at low temperatures and when the areometer has a slender body or stem. In aqueous liquids the liquid will be attracted by the stem, and, as it were, climb up a short distance, while in alcoholic and certain other liquids this is not the case.

Closer investigation has shown that the accuracy obtainable with an areometer does *not* depend upon the nature of the liquid, but upon the condition of the spindle (and stem) of the areometer itself, though, of course, the fact of capillary attraction, varying according to the kind of liquid under examination, is not denied.

It has been found that the glass of the areometer is generally covered with a most minute layer of fat. When the areometer is immersed in liquids capable of dissolving fat, the readings on the stem can be made sharp and exact. In the case of liquids which do not dissolve fats, the fatty coating interferes with the capillary attraction. Hence the spindle does not sink so far, the deficiency being more or less according to the nature of the liquid.

To remedy this it is only necessary to remove the fatty coating. This may be done by first removing from the spindles and stems every visible impurity, then to wipe them with a perfectly clean rag previously dampened with water but not wet, and to allow the remaining moisture to evaporate. The drying may be hastened by dipping the instrument into pure alcohol.

The efficacy of this remedy may be demonstrated in the following manner: On drawing a piece of tallow over a plate of glass, the adhering trace of fat may be almost completely removed by pressing a damp linen rag against it, while a dry rag scarcely affects it.

The author quotes a series of observations made with a very delicate areometer, cleaned in the manner just indicated, in distilled water at near 6° C. and at near 17° C. The figures given show that the probable error of reading off does not affect the first four decimals.

Detection of Peanut Oil in Olive Oil.

HOLDE, after a careful trial of the various processes for detecting the above adulteration, gives the preference to Renard's, which he describes as follows:

Ten Gm. of the suspected oil, after being saponified and the fatty acids separated by hydrochloric acid, are dissolved in 90-per-cent alcohol and precipitated by sugar of lead. The oleate of lead is separated by ether, and the residuum, consisting of palmitic and arachic acids, is decomposed by hydrochloric acid. The fatty acids are dissolved, with the aid of heat, in 50 Cc. of 90-per-cent alcohol. The arachic acid which separates after cooling is filtered out and washed, first with 90-per-cent and afterward with 70-per-cent alcohol. It is then dissolved in hot alcohol and the solution evaporated in a weighed saucer. The weight of the residuum, after taking into account the acid dissolved in the alcohol, equals the whole amount of arachic acid contained in the oil; the melting point of this residuum should be 70° to 71° C. With this process the author has always been successful; but when the olive oil contains not more than 5 to 10 per cent of peanut oil, it is necessary to make the test with 40 Gm. of the former, otherwise the melting point of the arachic acid cannot be estimated. Furthermore, the acids which are separated from the lead salt by hydrochloric acid must be recrystallized repeatedly with 90-per-cent alcohol, until the melting point ceases to rise, in case the latter is not found to exceed 70° C. at the first estimation. When peanut oil is present, the melting point will always be above 70°.—*Chem. Zeit.*

Preparation of Pure Silver Nitrate from Silver Residues.

THE silver residue, which is assumed to be chloride (or is previously converted into chloride), is treated, according to a method recently given by R. Dietel, in the following manner:

It is first reduced to metallic silver in the usual way by means of metallic iron and dilute hydrochloric acid. Since chloride of silver is somewhat soluble in hydrochloric acid, the whole of the latter must be combined with iron. When the reduction is completed, the metallic silver mixed with the excess of the metallic iron is washed until the washings no longer show a chlorine reaction. The metallic mixture is now dissolved in nitric acid, producing a solution of ferric nitrate and silver nitrate, which is divided into two uneven portions. The smaller one of these is heated to boiling, precipitated by soda, and the precipitated oxide of silver washed on a filter until every trace of alkali has disappeared. The larger portion is evaporated to dryness, and then carefully fused so as to partly decompose the ferric nitrate present. When the mass is in quiet fusion it is allowed to cool and treated with water, which dissolves the silver nitrate and leaves ferric oxide behind. Next, the solution is mixed with a little nitric acid, to convert any silver nitrite which might have been formed into silver nitrate. Should it be still colored from the presence of some undecomposed ferric nitrate, the solution is boiled and treated with the silver oxide obtained in the first operation, until all the iron is precipitated as oxide. The solution is now again evaporated to dryness, the residue dissolved in water, the solution allowed to deposit suspended matters, then filtered, and finally concentrated to the point of crystallization.—After *Pharm. Zeit.*, No. 2.

A New Test for Albumin in Urine.

THE following new test is announced by Dr. Ed. Spiegler (according to *Intern. pharm. Gen. Anzeiger*, No. 4), and is said to be quite delicate:

Mercuric Chloride	8 Gm.
Tartaric Acid	4 "
Sugar	20 "
Water	200 "

Dissolve.

The object of the addition of tartaric acid is to render the reagent strongly acid, and that of the sugar to render it specifically heavy.

When urine is to be tested for albumin it is first filtered, then mixed with a little acetic acid, and a portion of it transferred by means of a pipette into a test tube filled to one-third or one-half with the reagent, in such a way that the two liquids do not mix with each other, but form two separate layers. If albumin is present, even in such small amount as 1 in 50,000, a sharply-defined white ring will form at the line of contact. This ring is particularly well noticeable if the test tube be held against a black rod. The acetic acid is added to the urine to prevent the formation of mercury carbonate should the urine contain a carbonate (ammonium carbonate) as a result of decomposition.

Salicylic Acid Reaction.—According to Schneegans and Gerock, the violet color resulting from the mixture of 10 Cc. of a 0.2 per-cent solution of salicylic aldehyde with 2 Cc. of a very dilute solution of perchloride of iron may be removed by shaking with 5 Cc. of chloroform or ether. But if only 0.002 Gm. of salicylic acid be added, the violet color remains persistent. A similar reaction occurs with the methyl ester of salicylic acid, and it may be used to detect as little as 1 part in 500 of free acid in artificial oil of wintergreen.—*J. Pharm. Els.-Loth.* and *Ph. Journ.*

American Druggist

AN ILLUSTRATED BI-WEEKLY JOURNAL.

VOL. XXI., No. 6. WHOLE No. 228.

WILLIAM WOOD & COMPANY,
PUBLISHERS,
43 TO 47 EAST TENTH STREET,
NEW YORK, N. Y.

SUBSCRIPTION PRICE per year, - - - - - - - $1.50
SINGLE COPIES, - - - - - - - - - .10

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The AMERICAN DRUGGIST *is issued on the 1st and 15th of each month. Changes of advertisements should be received before the 5th and 20th. New advertisements can occasionally be inserted after the 10th and 25th.*

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PERFUMES AND THEIR PREPARATIONS, ETC. By GEORGE WILLIAM ATKINSON, Dr. Chem., Manufacturer of Perfumery. Translated from the third German edition by Isidor Furst. With Corrections and Additions by several experts. Illustrated with 32 engravings. New York: N. W. Henley & Co., 150 Nassau street; London: E. & F. N. Spon, 125 Strand. 1892. Pp. 312, 8vo.

There has for some time been inquiry on the part of our readers for a good and comprehensive manual on this subject, and we are pleased to be able to recommend this one. It contains complete directions for making a great variety of preparations, and gives detailed descriptions of aromatic substances, with their tests of purity and wholesale manufacture. The works heretofore available have not taken account of the modern improvements growing out of the recent discoveries in the nature of odoriferous substances of natural and synthetic origin, the advantages derived from their use having been mainly confined to those who manufacture on a large scale. It must not be expected that this or any other treatise will inform the reader of the methods for preparing some of the perfumes which have become celebrated and sources of wealth for their manufacturers. Most of these are the result of years of experimentation and of processes which are most carefully kept secret. But the work *will* give such information as will enable those who use it to get the best results from the materials employed and to procure such materials in the best condition as regards purity and efficiency.

Nearly half of the contents is devoted to the general consideration of the subject, the remainder being occupied with formulas for the various classes of preparations, including handkerchief perfumes, bouquets, or aromatic waters; ammoniacal and acid perfumes, dry perfumes (sachets), perfumes used for fumigation, hygienic and cosmetic perfumes; preparations for the care of the skin—such as emulsions, meals, pastes, vegetable milk, and cold creams; pomades and hair oils; preparations for the care of the mouth; skin cosmetics and face lotions; hair cosmetics, dyes, and depilatories; wax pomades, bandolines, and brillantines; and, finally, the colors used in perfumery and utensils used in the toilet. Not the least in importance is the very complete index. The extracts, etc., employed as bases, embrace over 60 formulas; the handkerchief perfumes about 120; the ammoniacal and acid perfumes, 20; about two dozen sachet formulas are given, and so on in about the same proportions. The section devoted to the pastes used in "making up" for theatrical performances might well have been more ample; but this is the only omission of any importance which we note, and it can hardly affect the general value of the book. The work has had the benefit of a most accomplished translator and, in its adaptation to the local needs, the critical services of some well-known specialists in pharmacognosy and organic chemistry.

THE TANNINS: A Monograph on the History, Preparation, Properties, Methods of Estimation, and Uses of the Vegetable Astringents. With an Index to the Literature of the Subject. By HENRY TRIMBLE, Ph.M., Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. Volume I. Philadelphia: J. B. Lippincott Co., 1892. Pp. 168, 8vo. Muslin, $2.00.

The author has been for twelve years engaged upon the collection of materials and the preparation of this work, and includes in this volume only so much as relates to the general subject and to gallotannic acid, with an index to the literature since 1791. The succeeding volume will relate to individual tannins and supplement the bibliographical index. Following this scheme the work opens with the description of tannin by William Lewis in 1763 and of gallic acid by Scheele in 1786. The remainder of the contents is fairly indicated by the title. The completeness with which the work has been indexed is by no means its least valuable feature, and entitles the author to much credit from all whose vocation makes a knowledge of the subject desirable. It is to be hoped that any contributions to the knowledge of tannins that may be practicable will be cordially made by those who are possessed of it, so that the final volume may be most comprehensive.

HÜLFSBUCH ZUR AUSFÜHRUNG CHEMISCHER ARBEITEN für Chemiker, Pharmaceuten und Mediciner. Von DR. HUGO SCHWANERT, ord. Professor der Chemie an der Universität Greifswald. 3te Aufl., 8vo. Braunschweig. 1891.

Prof. Schwanert's guide for chemical examinations appears here in a much improved form. A summary of the contents will show the scope of the work: 1. Analytical Examination of Inorganic Bodies. 2. Ditto of Organic Substances. 3. Systematic Plan of Analysis. 4. Separation of Groups. 5. Preparation and Testing of Chemicals. 6. Gravimetric Determinations. 7. Volumetric ditto. 8. Examination of Water, Foods, and Beverages. 9. Detection of Poisons and Blood. 10. Zoöchemical Determinations. 11. Tables. The greatest improvement has been made in chapters 5, 7, and 9. The book is a safe and useful guide for the busy analyst or pharmaceutical chemist.

AGE OF THE DOMESTIC ANIMALS: Being a Complete Treatise on the Dentition of the Horse, Ox, Sheep, Hog, and Dog, and on the various other Means of Determining the Age of these Animals. By RUSH SHIPPEN HUIDENKOPER, M.D., etc. Illustrated with 200 engravings. Philadelphia and London: F. A. Davis, 1891. Pp. 217, 8vo. Muslin, $1.75.

This is one of the books of which it may truly be said that it fills a long-felt want. Little that is of value has heretofore been available in the English language upon this subject, and, excepting in cases where careful records have been kept by breeders, it has been a matter of great difficulty to ascertain the approximate age of most domestic animals after the first few years of their life. In rural communities, where the apothecary must be something of a veterinarian, this book will prove of great value.

COCA AND COCAINE: Their History, Medical and Economic Uses, and Medicinal Preparations. By WILLIAM MARTINDALE, F. C.S., Joint Author of the "Extra Pharmacopœia," etc. Second edition. London: H. K. Lewis, 136 Gower street, W., 1892. Pp. 76, 12mo.

This is a reprint in larger type and with additions of matter relating to the uses of cocaine, its chemical characteristics and pharmaceutical manipulation.

A PRACTICAL TREATISE ON THE DISEASES OF THE EAR. Including a sketch of Aural Anatomy and Physiology. By D. B. ST. JOHN ROOSA, M.D., LL.D., Professor of the Diseases of the Eye and Ear in the New York Post-Graduate Medical School, etc. Seventh revised edition. New York: William Wood & Co., 1891. Pp. 741, royal 8vo.

The advances made in recent years in the knowledge of aural affections, particularly in their relation to affections of the mouth and upper air passages, have rendered revision of this standard work desirable. Such additions have been make as render it consistent with current literature and greatly increase its value as a systematic treatise. The work is one of the oldest current text books on the subject, originating in this country, and its author's reputation too well established to require any extended commendation at this time. It may not be amiss, however, to remark that his conservative views are not the manifestations of old-fogyism, but the result of a wide experience and of studious observation outside of the limits of his specialty.

KEMP & CO.'S PRESCRIBERS' PHARMACOPŒIA: A Synopsis of the More Recent Remedies, Official and Unofficial, with a Therapeutic Index and a Résumé of the B. P. Additions, 1890. By a Member of the Pharmaceutical Society of Great Britain. Second edition (Revised Reprint). Kemp & Co., Limited, Wholesale and Manufacturing Chemists, Bombay; London Office: 84 Leadenhall S., E. C., 1891. Pp. 429, 16mo. Four shillings.

This is a most comprehensive pocket book, being admirably complete as regards both the number of titles and the details of information relating to them.

THE GRASSES OF THE SOUTHWEST. Plates and Descriptions of the Grasses of the Desert Region of Western Texas, New Mexico, Arizona, and Southern California, Part II. By DR. GEO. VASEY, Botanist Department of Agriculture. Washington: December, 1891.

This is Bulletin No. 12 of the U. S. Department of Agriculture, and contains fifty beautiful lithograph plates and their descriptive text. It relates to a department of economic botany which has received the attention of the Government for many years, and should find a place in every public library.

A SYNOPSIS OF NEW REMEDIES, Rare Chemicals and Preparations. R. E. RHODE, Manufacturing Pharmacist, 504 North Clark street, cor. Goethe, Chicago.

This excellent trade list contains much incidental information of value in regard to sixty-nine of the remedies lately introduced, as well as other articles in more or less common use by physicians.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION at the Thirty-ninth Annual Meeting, held at New Orleans, La., April, 1891. Also the Constitution, By-laws, and Roll of Members. Philadelphia: Published by the Association, 1891. Pp. 767 and 138, 8vo.

This bulky volume is always acceptable. This year it has as a supplement a general index of 138 pages compiled by Mr. Wilder, embracing the contents of volumes xxi. to xxviii. Too much cannot be said in praise of the course pursued by the Association in providing this comprehensive index.

YEAR BOOK OF PHARMACY. Comprising Abstracts of Papers relating to Pharmacy, Materia Medica, and Chemistry contributed to British and Foreign Journals from July 1st, 1890, to June 30th, 1891. With the Transactions of the British Pharmaceutical Conference at the Twenty-eighth Annual Meeting, at Cardiff, August, 1891. London: J. & A. Churchill, 11 New Burlington street, 1891. Pp. 544, 8vo. Muslin.

This is always a well-arranged and judicious résumé of the contributions to pharmacology, and, for those who to not keep bound files of journals, will afford information upon most topics of general interest relating to maderia medica. At a cost of ten shillings it can be had by those who are not members of the Association.

WORLD'S COLUMBIAN EXHIBITION, Chicago, U. S. A., 1893. Classification and Rules, Department of Manufactures. With other Information for Intending Exhibitors.

Those of the drug trade who contemplate making use of this opportunity for exhibiting their products will do well to obtain a copy of this pamphlet by addressing the Chief of the Department, Mr. James Allison, at 160–174 Adams street, Chicago.

TRANSACTIONS of the Medical Society of the State of New York for the year 1891. Published by the Society, 1891. Pp. 560, 8vo. Muslin, $1.50 (for those who are not members).

The publications by this venerable Society are always valuable on account of the large number of papers upon medical and surgical topics, the text of recent laws affecting physicians, and the lists of members of the Society and of the county medical societies affiliating with it. This membership now amounts to 4,342, and embraces the leading practitioners in the tate.

THE CALENDAR OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 1892. London: Published by the Society, 1892. Pp. 567, 8vo. Two shillings.

This *vade mecum* to all that relates to the legal and professional status of British pharmacists leaves nothing unconsidered which properly falls within its scope.

BULLETIN OF THE HARVARD MEDICAL SCHOOL ASSOCIATION. No. 1. Report of the First Annual Meeting, held in Boston, June 23d, 1891. Boston: Published by the Association, 1891. Pp. 52, royal 8vo, paper.

We are requested to say that graduates of the school who have not received this report may obtain it by addressing the secretary, R. W. Lovett, M.D., 379 Boylston street, Boston, Mass. We wish to say, further, that the report is a most beautiful specimen of typography and of refined taste in book-making. It is a pleasure to handle it and feel its good paper and notice its good type, black ink, and generous margins.

Objections to the Paddock Pure Food Bill.

THE Pure Food Bill introduced by Senator Paddock, of which mention was made in the last issue of the AMERICAN DRUGGIST, has met with certain objections from the *Commercial Bulletin*. This journal, in discussing the conditions of this bill, considers it to be incomprehensive from the fact of its application to merely drugs and foods. Deceit being practised to so large an extent in other articles offered for sale, the writer holds that this act should be made to include all misrepresentation by dealers, irrespective of the kind of article concerned. A further objection to this bill is raised from the fact that, in enumerating what are within the meaning of this act as regards "adulterations," it has attempted to formulate a list of misrepresentations liable to be practised—a matter which it is impossible for any single man or body of men to complete. As a plan for the drawing up of such a bill the writer suggests "the English Merchandise Marks Act of 1887," and ends by saying that Senator Paddock's bill is in the proper direction, but not sufficiently comprehensive.—*Amer. Analyst.*

NEWS AND NOTES.

MASSACHUSETTS.

THE February dinner of the Boston Druggists' Association was held on the 23d at Young's Hotel. The Association was fortunate in having as guests Dr. Francis A. Harris, Medical Examiner for Suffolk County, and Gen. Douglas Frazer. After the dinner Dr. Harris spoke upon the "Poison Law, and other topics as suggested by his daily work." In the course of his remarks Dr. Harris said that he could not comprehend why druggists were compelled to keep a strict record of their poison sales, while the corner grocer could sell pounds of Paris green and arsenic without any restrictions. Gen. Frazer, a

former resident of China and Japan, took for his topic "China and Japan Contrasted." He treated his subject with much skill, and disposed of many fallacies concerning these countries. Alonzo G. Durgin, of Quincy, and Linus D. Drury, of Boston, were admitted to membership. The next meeting will be held on March 29th.

The Boston Druggists' Association has enjoyed a long and useful career. It was organized in December, 1875, and its growth has been a constant and healthy one; it numbers now nearly 100 members. It played a prominent part in the repeal of the Stamp Tax Act and in securing the sixth-class license for druggists. The following is a list of the past presidents, and contains many names well known to the trade throughout this country: Theodore Metcalf, 1876; William J. Cutler, 1877; Thomas L. Jenks, 1878; Nathaniel J. Rust, 1879; Joseph Burnett, 1880; Thomas Doliber, 1881; E. Waldo Cutler, 1882; Geo. F. H. Markoe, 1883; Solomon Carter, 1884; Joel S. Orne, 1885; John A. Gilman, 1886; Samuel A. D. Sheppard, 1887; Albert C. Smith, 1888; I. Bartlett Patten, 1889; Gorham D. Gilman, 1890; Amos K. Tilden, 1891. Mr. Charles A. West, the present president, is at the head of the well-known firm of West & Jenney.

A bill absolutely prohibiting the sale of cigarettes either to minors or grown persons has passed the House with scarcely any opposition, and that in face of an adverse committee report on the subject. Although the cigarette is considered a great nuisance and has many enemies, such sweeping legislation as this is hardly called for. This seems like a nursery enactment.

DR. THOMAS L. JENKS, a former West End druggist, has been reappointed and confirmed as a member of the Board of Public Institutions. Dr. Jenks holds many positions of trust, and is the president of the North End Savings Bank.

The members of the Board of Pharmacy have petitioned the Legislature for an increased appropriation to better enable them to carry out their work. Their chances of securing favorable legislation seem to be excellent.

HON. GORHAM D. GILMAN, of Gilman Brothers, is receiving much praise from the press and public for his efforts in pushing the anti-free pass bill. It was three years ago when Senator Gilman (then a member of the House) first introduced a bill looking to the abolishment of the free pass. It met with no favor and was quickly defeated. For the last two years Senator Gilman has represented his district in the upper branch, where he has used every effort to obtain favorable action for his bill, which has just passed the Senate and been sent to the House for concurrent action. It is a great reform, and was brought about largely by Senator Gilman, who is much pleased by the final outcome.

The class of '88 Massachusetts College of Pharmacy held their annual meeting and dinner at the Quincy House recently. After a pleasant banquet, the following officers for 1892 were elected: President, J. H. Chute, of West Medford; vice-president, J. Allen Tailby, of Wellesley; secretary and treasurer, Paul C. Klein, of Boston.

Postmaster Hart has appointed GEORGE P. HOPKINS, of 154 Blue Hill avenue, Roxbury, as a package station agent for that district.

MR. ALFRED H. BARTLETT, who has been with Gilman Brothers for the last seven years, severed his connection with that firm on March 13th. Mr. Bartlett has accepted a position as buyer for Jaynes & Co. His headquarters will be at 50 Washington street.

The copartnership heretofore existing between S. I. TIBBETTS and WILLIAM W. LACEY, under the firm names of S. Tibbetts & Co. and the Carlsbad Obesity Pill Co., has been dissolved.

The graduating class of the M. C. P. will number about thirty-five. The class photographer has already been selected. At the last class meeting, Mr. Gilman E. Thomas was chosen valedictorian, and Mr. C. W. Perkins salutatorian.

MESSRS. CONNOLLY & DAVIS have purchased the drug business of H. A. Moore at Neponset, and will run that store with Mr. Moore as manager.

A fire occurred in the store of J. H. PRATT, 45 Decatur street, recently; but little damage was caused.

CHARLES A. SLEE, of Salem, has been petitioned into insolvency.

The committee on entertainment of the Massachusetts State Pharmaceutical Association met at Young's Hotel, on the afternoon of March 2d, and discussed arrangements. The programme will comprise visits to local points of interest July 9th, 10th, and 11th. On July 12th a harbor excursion will be enjoyed at 8:30 in the morning. In the afternoon there will be a carriage ride, and in the evening a reception will be given at the Vendome.

The Board of Registration in Pharmacy has granted certificates to Howard H. Smith and Albert N. Lawrence, of Boston; Michael J. Flanagan, of Marlboro'; Frederick A. James, of Shelburne Falls; Henry M. Ripley, of Waltham; Albert C. Mason, of Franklin; Thomas K. Holbrook, of Lowell; Edmund C. Ketchum, of Lawrence; Ralph E. Stevens, of Marlboro'; Percy S. De Castor, of Lynn; Frank F. Pope, of Boston; Wilfred F. Root, of Brattleboro, Vt.

The liquor law committee gave two hearings recently on the petition for the establishment of agencies for the sale of intoxicating liquors for medicinal, mechanical, and chemical purposes only, in cities and towns voting to grant no licenses. The petition sets forth that the druggists' licenses now granted in such cases are not only inadequate, but capable of abuse, and asks that in any city or town voting no license, licenses of the sixth class shall not be granted. Some of the evidence adduced by the petitioners was of the most trivial character, and under the skilful cross-examination of Mr. William W. Bartlett, president of the Massachusetts Druggists' Alliance, its worthlessness was well shown.

At the last hearing the remonstrants were heard, Mr. Bartlett, Mr. Henry Canning, and Mr. Emerson, of Haverhill, appearing in opposition to the bill.

Mr. Bartlett made a well-balanced argument against the bill, in which the druggists' side of the question was presented in a skilful manner.

The substance of Mr. Bartlett's speech was as follows: Although I am here as a remonstrant to this bill, I am not here to oppose the temperance people in the least, but honor and respect them, and will aid them in their most worthy cause. I oppose this bill simply because I am convinced that it will not accomplish the end sought, and will antagonize a great many true friends of temperance. The law as it now stands fully provides for all contingencies, with the exception that the means for its enforcement are inadequate owing to local politics. I can see no public demand or necessity for this bill.

Liquor, I claim, should be used only for medicinal, mechanical, or chemical purposes. This being the case, reputable druggists only should dispense and deal in it. By druggists I mean druggists, and not liquor dealers in the drug business; here is where the great trouble comes. It has been claimed by temperance people that it was impossible to discriminate between the true druggist and the rum seller, and that the rum-selling druggist was the most difficult to detect and bring to justice. This is not the fact, at least so far as detection is concerned, for Mr. Vose, agent for the Board of Registration in Pharmacy, testified before the Committee on Public Health on Wednesday, February 3d, 1892, that there was no difficulty in detecting the rum-selling druggist, but the difficulty came in getting the local police to act in the matter, and that he did not bring them into court, as he easily could have done, for he was not hired by the Board for that purpose.

Now, the reputable druggists stand ready to help the temperance people in every practical way that lies in their power, and at the last meeting of the Massachusetts State Pharmaceutical Association it was unanimously voted to petition the General Court for such legislation as would fix the penalty for selling liquor to be drunk on the premises by a registered pharmacist to be imprisonment for the first offence. This action has already been taken, the hearing was held before the Public Health Committee, and that committee has already reported it inexpedient to legislate.

The reason why the honest pharmacist objects to town

agencies is that he will be solicited by the best citizens to sell them liquor; those who are the loudest for this bill would be the first to request him to violate the statute. In other words, the legitimate pharmacist wishes a law that the temperance people will allow him to comply with.

The statement has been made that the druggist who had a sixth-class license could continue to sell to a person who did not make proper use of it, provided he signed the book and complied with the form required by law. This statement is refuted by the statutes which I have before me.

There is no provision in this bill for emergency calls at night or Sundays. Then you are putting the whole matter into politics, and the agent, though honest, would be compelled at times to favor those who placed him in power. Although the same objections to the old town agencies might not exist, others would. As the law now stands, the proper authorities can, if they choose, grant one or more licenses, or refuse to grant any licenses, and there is no appeal from them. Why do they not license those who are fit to be licensed, and reject those who are not fit, under our present law? If politics prevents, then politics comes into the matter of town agents. Mr. Emerson testified that the State Assayer of Liquors stated to the Haverhill druggists that there was no standard for the purity of liquors. Now, if these liquors are dispensed by druggists the standard and tests of purity are very carefully laid down in the U. S. P., which is made the standard by law under the adulteration act.

Why will not the temperance people join hands with the honest druggists, who believe that with their aid they can remedy this curse upon the public?

Why do they call us rascals and repulse us, when we can and will help them?

Notwithstanding all the abuse heaped upon druggists at this and other hearings, I, in the name of the association which I represent, extend to the temperance people a friendly hand, and hope that in the near future there may be no misunderstandings between us, but that we may work together for the cause of true temperance.

Mr. Bartlett's conclusions were based upon the following facts: First, because the druggist must be educated in his business, and can best decide who needs liquor for sickness; second, because the pharmacy act gives him the privilege of dispensing liquor for medicine; thirdly, because there is a standard for the purity of liquors dispensed by druggists under the adulteration act, whereas it is a matter of history that under the old town agency act the worst possible liquors were sold; fourthly, because the druggist can be reached at all hours of the day and night and on Sundays; fifthly, because the druggists are scattered in each city or town, and hence are a great accommodation to the public, especially in emergency cases; sixthly, because no evidence has been produced at the hearings showing that the present law cannot be enforced where sufficient public opinion is back of it; lastly, because the Legislature cannot be expected to furnish public opinion as well as laws.

Replying to questions, Mr. Bartlett said he would not object to a city or town establishing such an agency as requested, if the present druggists' privileges were not disturbed, or if enough such agencies to meet public needs, with competent pharmacists to manage them, were established.

TENNESSEE.

EARLY in the morning of March 1st fire was discovered in the drug store of MR. W. T. FREYAR, Wayne avenue, Nashville, Tenn. The loss was nearly complete. Partially insured.

MESSRS WOMACK & MOXLEY purchased about the middle of February the drug store formerly owned by Mr. J. E. Harding, corner Jefferson and Belleville streets, Nashville, Tenn. Mr. Harding contemplates establishing himself elsewhere in the city ere long.

MR. W. E. HARRISON has within a short time opened a new drug store near the Howard School, Nashville, Tenn.

GORDON & MOORE succeed the firm of D. S. Moore & Co., Nashville, Tenn. They have a good location, and appear to be doing a flourishing business.

Not long since MR. LOCKERT, of the firm of Lockert & Reynolds, Clarksville, Tenn., purchased the interest of his partner. March 1st MR. ASKEW, formerly of the firm of Askew & Edwards, entered the firm, which is now Lockert & Askew.

MESSRS. CUNNINGHAM & ELLIS, both active, enterprising young men, succeed the firm of Askew & Edwards, Clarksville, Tenn. Mr. Cunningham is a graduate of the class of '91 Philadelphia College of Pharmacy.

A very unfortunate and apparently inexcusable accident (?) occurred in Little Rock, Ark., in the early morning of March 5th. Mr. Knox, who is stopping at a hotel near with his wife and child, went to Gibson's drugstore, corner Markham and Main streets, for some syrup of squills for the croup with which his 3-year-old child was suffering. Instead of the night clerk answering the bell himself, from some cause as yet not given to the public, a young man who was spending the night with him undertook to supply his place and play amateur pharmacist, with the usual result of dispensing medicines after the method of the young lady left by her father in charge of a store—by *matching colors*. Instead of dispensing syrup of squill, sulphuric acid was given, and the father, not knowing that an error had been made, gave the child a dose. Quickly discovering that something was wrong, a physician was promptly summoned, and antidotes applied which *may* save the child's life.

CHICAGO.

F. T. PHILLIPS has purchased the pharmacy of B. Malloy at 3209 Cottage Grove avenue.

The C. J. FARIES Co., of this city, has been incorporated to manufacture toilet articles, the incorporators being Charles S. Painter, Wm. M. Jones, Charles J. Jones, and C. F. Jones.

The H. W. MEDBURY Co., of this city, has been incorporated with a capital stock of $500 to manufacture proprietary and toilet specialties, the interested parties being Wm. Cloney, B. W. Stadden, and F. P. Reese.

The firm of SATTLER & CHALLMAN succeeds G. F. Umsted at Center avenue and Adams street.

J. M. RAUSCH, formerly of 66th and Wallace streets, has opened a store at 47th and Evans avenue.

At a recent meeting of the Chicago Retail Druggists' Association, held at the Sherman House, the following officers were elected: James Thompson, president; Emil Thiele, Frank K. Knowles, and Adolph T. Fleischer, vice-presidents; Eugene von Hermann, secretary; and Walter M. Sempill, treasurer. The meeting was well attended, there being some 125 persons present.

MOYEN BROS. have purchased the drug store of A. E. Thompson at 1218 Milwaukee avenue.

The various colleges of medicine, dentistry, and pharmacy are nearing completion of their courses of instruction or have already completed such. The commencement exercises of the Illinois College of Pharmacy were held in the Grand Opera House February 25th; those of the Chicago College of Pharmacy will be held at Hooley's Theatre April 19th, the course at this institution having been extended to twenty-eight weeks.

PROF. RICHE, of the Paris School of Pharmacy, is at present in this city, being a delegate on the foreign commission investigating our pork industries.

THEODORE WINHOLT, at West Indiana street and Ashland avenue, has opened a new pharmacy at Chicago and Washtenaw avenues.

HERON K. HIBBEN has purchased the pharmacy at 420 26th street formerly owned by Arzt & Co., and more recently by Eugene von Hermann.

JACOB L. LEYSER, formerly in business on East Division street, has removed with his family to Milwaukee.

C. A. KNAPPENBERGER, a graduate of the Chicago College of Pharmacy, has accepted a position at Kankakee as manager of a new store recently established by Dr. Fraser.

CHARLES KURRASCH, of Kankakee, has disposed of his south-side store to the firm of Hickey & Schneider, Miss Theresa Hickey being the senior member.